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(54) Title: ELECTRONIC PROGRAM GUIDE WITH RELATED-PROGRAM SEARCH FEATURE (54) Titre: GUIDE DE PROGRAMMES ELECTRONIQUE COMPORTANT UNE FONCTION DE RECHERCHE DE PROGRAMMES ASSOCIES		
(57) Abstract <p>A system for searching for programs is provided. The system may be provide the user with an opportunity to indicate an interest in a given program. The system may provide the user with an opportunity to request that the system locate programs that are related to the given program in which the user has indicated an interest. The system may locate program listings that are related to the given program. The located program listings may be related to the given program based on attributes of the given program. The system may display a list of located listings and allow the user to select listings from the list. The system may tune to a program selected from the list, may display an information display screen for a program selected from the list, etc. The system may provide the user with an opportunity to configure and save search parameters. The system may sort related program listings based on the attributes of the given program. The system may provide the user with the opportunity to retrieve saved searches to locate currently available program listings and the opportunity to delete a saved search, rename a saved search, receive automatic notifications of programs matching a saved search, etc.</p> (57) Abrégé <p>L'invention concerne un système de recherche de programmes, qui offre à un utilisateur la possibilité de manifester un intérêt dans un programme donné, de demander audit système de repérer les programmes associés au programme donné, pour lequel l'utilisateur a manifesté un intérêt. Le système repère ensuite les listes de programmes associés au programme donné sur la base des attributs de ce dernier, et affiche un registre des listes repérées, permettant à l'utilisateur de faire une sélection parmi celles-ci. Le système se branche alors sur un programme sélectionné dans le registre et affiche un écran d'informations concernant le programme sélectionné, etc. Ce système offre encore à l'utilisateur la possibilité de configurer et de sauvegarder les paramètres de recherche, et classe les listes de programmes associés sur la base des attributs du programme donné. Ce système offre enfin à l'utilisateur la possibilité d'extraire des recherches sauvegardées afin de repérer des listes de programmes disponibles actuellement, de supprimer ou de renommer une recherche sauvegardée, de recevoir des notifications automatiques relatives à des programmes correspondant à une recherche sauvegardée, etc.</p>		

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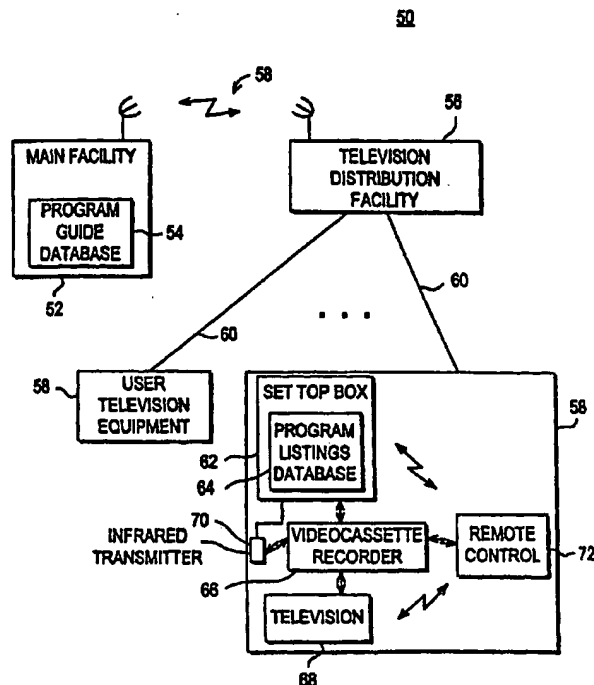
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(54) Title: **ELECTRONIC PROGRAM GUIDE WITH RELATED-PROGRAM SEARCH FEATURE**

(57) Abstract

A system for searching for programs is provided. The system may provide the user with an opportunity to indicate an interest in a given program. The system may provide the user with an opportunity to request that the system locate programs that are related to the given program in which the user has indicated an interest. The system may locate program listings that are related to the given program. The located program listings may be related to the given program based on attributes of the given program. The system may display a list of located listings and allow the user to select listings from the list. The system may tune to a program selected from the list, may display an information display screen for a program selected from the list, etc. The system may provide the user with an opportunity to configure and save search parameters. The system may sort related program listings based on the attributes of the given program. The system may provide the user with the opportunity to retrieve saved searches to locate currently available program listings and the opportunity to delete a saved search, rename a saved search, receive automatic notifications of programs matching a saved search, etc.



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Description

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ELECTRONIC PROGRAM GUIDE WITH
RELATED-PROGRAM SEARCH FEATURE

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Background of the Invention

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This invention relates to interactive
5 television systems such as interactive television
program guide systems, and more particularly, to
techniques for program searching in these systems.

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Cable, satellite, and broadcast television
systems provide a large number of television channels.
10 Typically, the number of channels provided by cable and
satellite systems is over a hundred and ever
increasing. Television viewers have traditionally
consulted printed television program schedules to
obtain programing information. More recently,
40 15 interactive electronic television program guides have
been developed to allow television program information
to be displayed on viewer television equipment.

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Interactive electronic television program
guides ("program guides") typically provide program
20 listings for all channels available in the television
system. Some program guides include features for
allowing users to search for programs. Such search

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features are often complex, time-consuming, and cumbersome. For example, such search features may require that a user select search parameters such as preferred programming genres before searching for

5 programs, that a user navigate through several display screens before being allowed to initiate a search, that the user enter at least a portion of a program title to initiate a search, etc.

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It is therefore an object of the present invention to provide a television system that includes an improved program searching feature.

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Summary of the Invention

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These and other objects of the invention are accomplished in accordance with the principles of the present invention by providing a system for searching for programs. The system may provide the user with an opportunity to indicate an interest in a given program. The system may provide the user with an opportunity to request that the system locate programs that are

20 related to the given program in which the user indicated an interest. The system may locate program listings that are related to the given program. The located program listings may be related to the given program based on attributes of the given program.

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25 The system may display a list of the located program listings. The system may provide the user with an opportunity to select from the list of related programs. The system may tune to a program selected from the list, may display an information display

30 screen for a program selected from the list, etc.

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The system may provide the user with an opportunity to configure search parameters. For example, The system may present the user with a list of

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attributes for the given program and may allow the user to select one or more attributes and may allow the user to select which logical operations (e.g., and/or operations) are to be performed on the attributes. The

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5 system may search television program listings and may display a list of related programs based on the selected attributes.

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The system may sort related program listings based on the attributes of the given program. The
10 system may provide the user with an opportunity to save search parameters for use at a later time. The system may display a list of previously saved searches and may
25 provide the user with an opportunity to direct the system to locate currently available program listings
15 based on a saved search from the list. The system may locate currently available listings based on the user-selected search parameters from the saved search when
30 the saved search is retrieved. The system may allow the user to delete a saved search. The system may
20 automatically display a notification based on user-selected search parameters from a saved search. The
35 system may provide the user with an opportunity to view the user-selected search parameters for a saved search.

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Further features of the invention, its nature
25 and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

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Brief Description of the Drawings

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FIG. 1 is a diagram of an illustrative
30 interactive television program guide system in accordance with the present invention.

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FIG. 2 is a flow chart of illustrative steps involved in providing program searching in accordance with the present invention.

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FIG. 3a is a flow chart of illustrative steps involved in providing an opportunity to request that the system locate programs related to a given program in accordance with the present invention.

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FIG. 3b is a diagram of an illustrative sequence of illustrative display screens for providing an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

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FIG. 3c is a diagram of an illustrative sequence of illustrative display screens for providing an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

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FIG. 3d is a diagram of an illustrative sequence of illustrative display screens for providing an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

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FIG. 3e is a diagram of an illustrative sequence of illustrative display screens for providing an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

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FIG. 4 is a flow chart of illustrative steps involved in displaying program listings that are related to a given program in accordance with the present invention.

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FIG. 5 is a diagram of an illustrative sequence of illustrative display screens for displaying

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program listings that are related to a given program in accordance with the present invention.

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FIG. 6 is a flow chart of illustrative steps involved in displaying program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

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FIG. 7a is a diagram of an illustrative sequence of illustrative display screens for searching for program listing that are related to a given program based on user-selected search parameters in accordance with the present invention.

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FIG. 7b is a diagram of an illustrative sequence of illustrative display screens for displaying program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

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FIG. 7c is a diagram of an illustrative sequence of illustrative display screens for searching for program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

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FIG. 8a is a diagram of an illustrative sequence of illustrative display screens for searching for program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

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FIG. 8b is a diagram of an illustrative sequence of illustrative display screens for selecting a program listing that is related to a user-selected program in accordance with the present invention.

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FIG. 9 is a flow chart of illustrative steps involved in providing display screens when a user makes

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selections from a related-program find display screen in accordance with the present invention.

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FIG. 10a is a flow of illustrative steps involved in displaying a display screen having a list of saved searches in accordance with the present invention.

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FIG. 10b is a diagram of an illustrative sequence of illustrative display screens for providing a display screen having a list of saved searches in accordance with the present invention.

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FIG. 11 is flow chart of illustrative involved in providing saved search features in accordance with the present invention.

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FIG. 12 is a diagram of an illustrative sequence of illustrative display screens for searching for program listings based on a saved search in accordance with the present invention.

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FIG. 13 is a diagram of an illustrative sequence of illustrative display screens for deleting a saved search in accordance with the present invention.

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FIG. 14 is a diagram of an illustrative sequence of illustrative display screens for providing an automatic notification of a program matching a saved search in accordance with the present invention.

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FIG. 15 is a diagram of an illustrative sequence of illustrative display screens for displaying search parameters for a saved search in accordance with the present invention.

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FIG. 16 is a diagram of an illustrative sequence of illustrative display screens for providing save search features in accordance with the present invention.

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Detailed Description of the Preferred Embodiments

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An illustrative interactive television program guide system 50 in accordance with the present invention is shown in FIG. 1. Main facility 52

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5 includes a program guide database 54 for storing program guide information (e.g., television program listings data, program-related information, service listings data, service-related information, pay-per-view ordering information, television program promotional information, etc.).

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Main facility 52 preferably includes a processor to handle information distribution tasks. Information from database 54 may be transmitted in parallel via communications links such as

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15 communications link 58 to multiple television distribution facilities such as television distribution facility 56. Only one television distribution facility is shown in FIG. 1 to avoid over complicating the drawings. Each communications link 58 may be a

20 satellite link, a telephone network link, a combination of such links, or another suitable communications path. Text, graphics, and video data signals may be transmitted over link 58. If it is desired to transmit video signals over communications link 58, a relatively

40 25 high bandwidth link such as a satellite link is generally preferable to a relatively low bandwidth link such as a telephone line.

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Television distribution facility 56 is a facility such as a cable system headend, a broadcast

30 distribution facility, or a satellite television distribution facility for distributing television signals to viewers.

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The program guide information transmitted by main facility 52 to television distribution facility 56

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includes television program listings data such as program times, channels, titles, descriptions, program type, genre, actors, etc. Transmitted program guide information may include pay program data such as

5 pricing information for individual programs and subscription channels, time windows for ordering programs and channels, telephone numbers for placing orders that cannot be impulse ordered, etc.

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Television distribution facility 56 may

10 distribute program guide information received from main facility 52 to user television equipment 58 via communications paths 60. User television equipment 58 may be any suitable equipment for providing television that contains sufficient processing capabilities to

25 monitor viewing activities, analyze these activities and display appropriate program listings information for the user.

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Communications paths 60 may be cable links, fiber optic links, satellite links, broadcast links, or

20 other suitable link, or a combination of such links.

35 Any suitable communications scheme may be used to transmit data over paths 60, including in-band transmissions, out-of-band transmissions, digital transmissions, analog transmissions, cable

40 25 transmissions, satellite transmissions, over-the-air transmissions, multichannel multipoint distribution services (MMDS) transmissions, etc.

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Communications paths 60 preferably have sufficient bandwidth to allow television distribution

30 facility 56 to distribute television programming, program listings information, advertisements, and other information to user television equipment 58. Multiple television and audio channels (analog, digital, or both

50 analog and digital) may be provided to user television

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equipment 58 via communication paths 60. If desired, some of the data may be distributed to user television equipment 58 by one or more distribution facilities that are separate from television distribution facility 5 56 using communication paths that are at least partly separate from communication paths 60.

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The data distribution technique that is used to distribute data on paths 60 may depend on the type of information that is being distributed. For example, 10 text and graphics may be distributed over an out-of-band channel using an out-of-band modulator or distributed in the vertical blanking interval lines of an analog video channel. Video information may also be 25 distributed in this way, although large quantities of video information may be more efficiently distributed 15 using one or more digital channels or streams on paths 60. Such digital channels or streams may also be used 30 for distributing text and graphics.

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Each user television equipment device 58 has 20 a receiver which is typically a set-top box such as set-top box 62. The receiver may also be other 35 suitable television equipment such as an advanced television receiver into which circuitry similar to set-top-box circuitry has been integrated or a personal 40 25 computer television (PC/TV). For illustrative purposes, the present invention will be described in the context of user television equipment 58 that uses set-top boxes.

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Each set-top box 62 is typically connected to 30 an optional videocassette recorder 66 so that selected television programs may be recorded. Videocassette recorder 66 is typically connected to a television 68. 50 To record a program, set-top box 62 tunes to a particular channel and sends control signals to

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videocassette recorder 66 (e.g., using infrared transmitter 70) that instructs videocassette recorder 66 to start and stop recording at the appropriate times.

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5 Television program listings, advertisements, programming information, and other information may be displayed on television 68. Each set-top box 62, videocassette recorder 66, and television 68 can be controlled by one or more remote controls 70 or any
20 10 other suitable user input interface, such as a wireless keyboard, mouse, trackball, dedicated set of buttons, touch screen display remote, etc. Remote controls, such as remote control 70, have various buttons that
25 can be pressed by the user such as arrow keys (e.g., for directing on-screen movement of a highlight region, for directing scrolling functions, etc.), an OK,
15 select, enter, or other such selection key for making a selection (hereinafter referred to as an OK key),
30 channel number keys (for selecting a television channel), a favorites key (to invoke functions related
20 to user preferences), a delete key (to delete menu items or to express a disinterest in certain user
35 preferences), an information key for receiving information on a program (hereinafter referred to as an
40 25 INFO key), a specific feature key (e.g., a related-program search key to invoke program searching), etc. For illustrative purposes, many aspects of the present are discussed primarily in the context of a user
45 interface being a remote control.

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30 Certain program guide features, such as pay program purchasing, the purchasing of products or services, and data collection functions, may require
50 that user television equipment 58 transmit data to television distribution facility 56 over communications

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paths 60. If desired, such data may be transmitted over telephone lines or other separate communications paths. If features such as these are provided using facilities separate from television distribution

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5 facility 56, some of the communications involving user television equipment 58 may be made directly with the separate facility (not shown).

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If desired, an interactive television program guide system may be implemented using a data-relay architecture. In such an architecture, television distribution facility 56 may serve as a data relay site and user television equipment 58 may be a data destination site. For example, as television distribution facility 56 receives information from main facility 52, television distribution facility 56 may continuously or periodically distribute information to user television equipment 58. In a data-relay architecture, a program guide implemented on user television equipment 58 may use a database (e.g., database 64) for storing program guide information at user television equipment. Program guide information may include program listings and program attributes. Program attributes may be information such as program title, program actors, program duration, program genre (e.g., sports, comedy, movies, etc.), program channel, scheduled program duration, program rating (e.g., TV-G, PG-13, etc.), program content rating (or critics' rating or star rating, e.g., one star, two stars, etc.) and other related parameters that can be tagged to a program. Television distribution facility 56 may also poll set-top boxes periodically for certain information (e.g., pay program account information or information regarding programs that have been purchased and viewed using locally-generated authorization techniques).

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The features of the present invention may be implemented in a client-server arrangement or in a combination client-server and data-relay arrangement.

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In such arrangements, the server (e.g., television distribution facility 56) may include a database that may include program listing information.

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For clarity, the present invention is sometimes described primarily in the context of program guides that are implemented on user television equipment rather than in the context of program guides that are implemented partially on a server and partially on user television equipment or a more fully server-based architecture.

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Each set-top box 62 preferably contains a processor to handle tasks associated with implementing an application on the set-top box 62 that assists the user in searching for programs. For example, a stand-alone application may be provided that supports program searching, as described more fully below. If desired, these tasks may be implemented using a program guide application. For clarity, the present invention will be described primarily in the context of such a program guide application and in the context of a program guide system.

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Illustrative steps involved in providing program searching in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 2. Initially at step 80, the program guide may provide a user with an opportunity to request that the system locate programs that are related to a particular program (e.g., a program in which the user has indicated an interest using the system). The program guide may, at step 82, display a list of programs that are related to the

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particular program when the user requests that the system locate programs that are related to the particular program. The program guide may include programs in the list based on criteria, such as whether

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5 a program is related in attribute to the particular program, whether a program is a sequel or prequel of the particular program, whether a program is in the same program series as the particular program, whether a program is a series that is related to the particular
10 program, whether a program is related the user-selected program in content or subject matter, whether a program has the same actor(s), director, category, theme, or
20 production year as the user-selected program, etc.

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Illustrative steps involved in providing a
15 user with an opportunity to request that a system locate programs related to a given program in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 3a. At step 84, the program guide may provide
20 a user with an opportunity to indicate an interest in a given program. The user may indicate an interest in the given program by, for example, positioning a highlight region on a program listing for the given program, tuning the system to the given program,
35 selecting that an information display screen for the given program be displayed, etc. At step 86, the program guide may provide the user with an opportunity to request that the system locate programs that are related to the given program.

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30 Illustrative display screens of FIG. 3b, FIG. 3c, FIG. 3d, and FIG. 3e may be provided based on the illustrative steps of FIG. 3a. As shown in FIG. 3b, the program guide may display related program find display screen 94 for the program Seinfeld when a user

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presses a single user interface key while a video for Seinfeld is displayed in display screen 92. The single user interface key may, for example, be a search key of a remote control for requesting that the system locate

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5 related programs.

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If desired, as shown in FIG. 3c, the program guide may display related-program find display screen 90 for the program Seinfeld when the user presses a predetermined sequence of user interface keys after navigating a highlight region on a listing for Seinfeld in program listings display screen 88. The predetermined sequence of user interface keys may, for example, be pressing a search key and an OK key of a remote control.

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15 A sequence of keys may be used when the user interface device (e.g., a remote control) does not have a key dedicated to providing the user with an opportunity to request that the system locate related programs.

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20 If desired, as shown in FIG. 3d, the program guide may display related-program find display screen 98 for the Knicks v. Wizards basketball game when the user presses a search key of a remote control after navigating a highlight region on the listing for the Knicks v. Wizards basketball game in sports category program listings display screen 96.

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30 If desired, as shown in FIG. 3e, the program guide may display related-program find display screen 102 for Dateline when a user presses a remote control OK key after navigating a highlight region on related programs option 104 of information display screen 100 for Dateline. The program guide may have displayed information display screen 100 for Dateline when, for example, the user pressed an OK key of a remote control

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after navigating a highlight region on a Dateline program listing, the user pressed an INFO key when video for Dateline is being displayed, etc. Examples of program guide systems with information display screen

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5 capabilities are provided in Rudnick et al., U.S. Patent Application Serial No. 09/356,268 filed July 16, 1999, which is hereby incorporated by reference herein in its entirety.

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10 Illustrative steps involved in displaying program listings that are related to a given program in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 4. At step 106, the program guide may provide the user with an opportunity to indicate an interest in
25 a given program. At step 108, when the user indicates an interest in the given program, the program guide may provide the user with an opportunity to request that the system locate programs that are related to the given program.

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20 At step 110, the program guide may locate program listings (e.g., program listings stored in a program guide database, such as database 64 of FIG. 1) that are related to the given program. The program guide may locate program listings based on attributes
35 of the given program. For example, the program guide may locate program listings for programs that have an attribute that matches an attribute of the given program (e.g., a common actor, same content, same
40 subject matter, same series, common director, same category, same theme, common production year, etc.), program listings for programs that have a plurality of attributes matching attributes of the given program,
45 program listings for programs that have attributes that are related to the attributes of the given program

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(e.g., prequels, sequels, similar content, similar subject matter, related series, etc.), etc.

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At step 112, the program guide may display a display screen (or, if desired, an overlay) having listings for programs which are related to the user-selected program. From the list, the user may find a particular program of interest to the user. The program guide may provide the user with an opportunity to select a program listing from the list at step 114.

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10 Illustrative program listings display screen 116, illustrative information display screen 118, and illustrative related-program find display screen 120 of FIG. 5 may be provided based on the illustrative steps of FIG. 4. The program guide may display information display screen 118 for Star Trek: The Next Generation - Episode Y when a user selects a listing for Star Trek: The Next Generation - Episode Y in program listings display screen 116 (e.g., by pressing an INFO key when a highlight region is positioned on that listing).
20 Information display screen 118 may include a related programs options 122 for requesting to find programs related to Star Trek: The Next Generation - Episode Y.

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The program guide may display related program find display screen 120 when a user selects the related programs option 122 from information display screen 118. Related-program find display screen 120 includes a list of programs related to Star Trek: The Next Generation - Episode Y that contains: Episode K of Star Trek: The Next Generation, Episode D of Star Trek: Voyager, Star Trek: Wrath of Khan, Episode Z of Babylon 5, Episode X of Babylon 5, etc. The list may have been sorted based on attributes that were used by the program guide to locate the displayed program listings. For example, the list may have been sorted based on

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which attribute caused the match, or for example, based on how many attributes matched. Related-program find display screen 120 may include an indicator, such as arrow 124, to inform the user that the list may be

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5 scrolled to display further listings for related programs that are not currently displayed. Such an indicator may be used when there is insufficient space for displaying all the related programs in a related program find display screen.

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10 Illustrative steps involved in displaying program listings that are related to a given program based on user-configured search parameters in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 6. Steps 126 and 128 are the same as steps 106 and 108 of FIG. 4, respectively, and are discussed above. At step 130 of FIG. 6, when the user requests that the system locate programs that are related to a given program, the program guide may provide the user with an opportunity to configure search parameters for searching for related programs based on attributes of the user-selected program. At step 132, the program guide may then locate program listings based on the user-configured search parameters. The program guide 25 may locate program listings from program listings stored in a database, such as program listings database 64 FIG. 1. The location of the program listings database may depend on the communications arrangement of the interactive television program guide system 30 (e.g., in a client-server arrangement at least part of the database may be located at a television distribution facility). At step 134, the program guide may display a display screen including on-screen listings for programs that are related to the given

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program based on the user-configured search parameters.
At step 134a, the program guide may sort the located
listings for display based on the user-configured
search parameters. At step 134b, the program guide may

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5 provide the user with an opportunity to select one of
the displayed programs listings.

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Illustrative display screen 136 and
illustrative related-program find search configuration
display screen 138 (hereinafter, configuration display
10 screen 138) of FIG. 7a may be provided based on the
illustrative steps of FIG. 6. The program guide may
display configuration display screen 138 for an episode
of Star Trek: The Next Generation when a user presses
25 a single key of a remote control while a video for that
episode of Star Trek: The Next Generation is being
15 displayed. Configuration display screen 138 may
contain an on-screen list of attributes for the given
program, Star Trek: The Next Generation. The
configuration display screen 138 may contain options
20 for providing the user with an opportunity to assign
various importance levels to the on-screen program
35 attributes. The option may provide the user with an
opportunity to assign different importance levels such
as required, desired, ignored, or excluded to the
40 program attributes.

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Configuration display screen 138 shows that
importance levels may be assigned to the program
attributes for the given episode of Star Trek: The Next
Generation so that when locating related program
30 listings, the program guide excludes programs that are
Star Trek: The Next Generation, ignores whether a
program is a Star Trek program when deciding whether it
50 matches, ignores whether a program is a Star Trek movie
when deciding whether it matches, requires matching

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programs to be science fiction, requires matching programs to have Patrick Stewart. Configuration display screen 138 may include a search option that may provide the user with an opportunity to direct the program guide system to locate program listings related to the given program based on the program attributes and their assigned importance levels.

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Illustrative related-program find display screens 140 and 142 of FIG. 7b may be provided based on the illustrative steps of FIG. 6. The program guide may display related-program find display screen 140 when, for example, the user selects the search option from configuration display screen 138 of FIG. 7a. Display screen 140 may include a list of programs that are related to the given program based on the search parameters of configuration display screen 138 of FIG. 7a. The list of related programs in display screen 140 includes the program Lifeforce, which is a science fiction program (a required attribute) starring Patrick Stewart (a required attribute), and includes three Star Trek movies (Insurrection, First Contact, and Generations) that are also science fiction programs starring Patrick Stewart and also starring Jonathan Frakes (a desired attribute). Lifeforce may be displayed at the bottom of the list because the other programs more closely match the user-configured search parameters.

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Display screen 140 may include option 144 for displaying more program listings that are related to Star-Trek: The Next Generation based on the user-configured search parameters. Display screen 140 may include save configuration option 146 that provides the user with an opportunity to save the user-configured search parameters. The program guide may display

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related-program find display screen 142 when the user selects save configuration option 146 of display screen 140. Display screen 142 is the same display screen as display screen 140 except that display screen 142

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5 includes unsave configuration option 148 that provides the user with an opportunity to unsave the user-configured search parameters (e.g., delete the saved user-configured search parameters).

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10 If desired, an arrangement such as that shown in FIG. 7c may be used to search for related programs. Initially, the user may indicate an interest in a given program by selecting a program listing for the given program from an on-screen display of program listings, by pressing an OK button or other remote control button
25 while tuned to the given program (e.g., while tuned to the given program with a set-top box or the like), by selecting the program from the results of a search,
30 etc.

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A list of attributes for the given program
20 (such as the attribute list of display screen 300 of FIG. 7c) may be displayed for the user (e.g., by the program guide or other interactive application running on the system). A moveable highlight region such as highlight region 302 or other such indicator may be
40 25 used to provide the user with an opportunity to select attributes of interest to be used in searching for related programs.

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As shown in display screen 304 of FIG. 7c,
the user may select one or more attributes (e.g., by
30 pressing a remote control OK button or otherwise selecting desired attributes). The system may display a visual indication of which program attributes have
50 been scheduled. For example, the system may highlight selected attributes, may change their color, text font,

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brightness, etc. or may display an indicator such as indicators 306 to indicate which program attributes have been selected by the user. When the user highlights search option 308 and presses a remote

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5 control OK button (or otherwise selects option 308), the system searches for program listings matching the selected program attributes. When plural attributes are selected, the search may be performed using a logical AND or a logical OR function. The search results may be displayed using any suitable on-screen arrangement and may be selectable (for more information, automatic tuning, etc.) if desired.

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The arrangement of FIG. 7c is merely illustrative. Any suitable arrangement may be used for providing an on-screen display of program attributes related to a selected program. The attributes may include program genre(s), actors, rating, channel, director, year produced, or any other suitable program attributes. The program attribute information may be provided with the program listings data. In a client-server arrangement, for example, the program attributes may be maintained with program listings data stored on a server located at a cable system headend (or at another suitable location). In configurations in which program listings are stored locally on a set-top box or other user equipment, program attributes may be maintained locally.

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Illustrative information display screen 150 and illustrative related-program find search configuration display screen 152 (hereinafter, configuration display screen 152) of FIG. 8a may be provided based on the illustrative steps of FIG. 6. The program guide may display information display screen 150 when a user selects to receive information

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on the Denver Broncos v. Dallas Cowboys football game. Information display screen 150 may include related programs option 154 that provides the user with an opportunity to request that the system locate programs that are related to the Denver Broncos v. Dallas Cowboys football game. The program guide may display configuration display screen 152 when the user selects the related programs options from information display screen 150. Configuration display screen 152 may include an on-screen list of program attributes that are to be configured by the user.

The on-screen program attributes may differ based on the specifics of the given program and based on the category for the given program. For example, for a sports category program, the on-screen list may include attributes that are specific to that sports program and/or include attributes that are related to sports programs in general. As shown, configuration display screen 152 may include the following attributes: other football games, NFL games, Broncos games, Cowboys games, any sporting events, football-related programs, programs with John Elway as guest, etc. The user may then configure the search parameters to require matching programs to be football games, desire NFL games and Broncos games, exclude Cowboys games, ignore whether a program is a sporting event when deciding whether it matches, ignore whether a program is a football related program when deciding whether it matches, and ignore whether a program has John Elway as guest when deciding whether it matches.

Illustrative related program find display screen 158 of FIG. 8b may be provided based on the illustrative steps of FIG. 6. Display screen 158 may be displayed when a user selects search option 156 from

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configuration display screen 152 of FIG. 8a. Display screen 158 of FIG. 8b may include listings that are sorted for display based on the user-configured search parameters of configuration display screen 158. The

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5 program guide may display program display screen 160 that contains video of a current program when the user selects a listing for a current program from the program listings contained in related-program find display screen 158. If desired, the program guide may
20 display information display screen 162 for a program when the user selects a program listing from the program listings contained in related-program find display screen 158.

25

If desired, the listings in related-program
15 find display screen 158 may include program title, air time, channel, rating, pay-per-view information, etc.

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Illustrative steps for an interactive television system such as interactive television program guide system 50 of FIG. 1 involved in providing
20 the illustrative display screens of FIG. 8b are shown in FIG. 9. At step 164, the program guide may display a display screen having on-screen program listings that are related to a given program. Step 164 may include
35 step 166 in which the program may provide the user with an opportunity to select one of the on-screen program listings. At step 168, the program guide may tune to a channel for a current program when the user selects one of the on-screen listings that is for a current
40 program. At step 170, the program guide may display an information display screen for a selected on-screen listing when the user selects that on-screen listing. At step 172, the program guide may return the user to
45 viewing television or to an earlier display screen when the user exits from the display screen having the

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related on-screen program listings (e.g., presses an exit or back key of a remote control).

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Illustrative steps for an interactive television system such as interactive television

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5 program guide system 50 of FIG. 1 involved in displaying a list of saved searches are shown in FIG. 10a. At step 174, the program guide may provide the user with an opportunity to select a saved search option. At step 176, the program guide may display a display screen having a list of saved searches when a user selects the saved search option.

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Illustrative main menu display screen 178 and illustrative saved searches display screen 180 of FIG. 10b may be provided based on the illustrative steps of

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15 FIG. 10a. The program guide may display main menu display screen 178 to provide a main selection menu for accessing program guide features. Main menu display screen 178 may include saved searches option 182. The program guide may display saved searches display screen 180 when the user selects saved searches option 182.

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Saved searches display screen 180 may include a list of saved-searches that are identified on the screen using the given program title for each saved search. When two saved searches are for two programs with the same

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25 title, the program guide may use numbering to distinguish the listings. If desired, the user may have been allowed to name the saved searches. For example, the program guide may have provided the user with an opportunity to enter a name (e.g., by selecting or entering alphanumeric letters with a user interface device) for a search that a user is directing the program guide to save. The saved searches may be selected by the user to provide the user with an opportunity to search current program listings using

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search parameters that were user-configured in an earlier search of program listings.

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Illustrative steps for an interactive television system such as interactive television program guide system 50 of FIG. 1 involved in displaying a list of saved searches are shown in FIG. 11. At step 184, the program guide may display a display screen having a list of saved searches. At step 186, the program guide may provide a user with an opportunity to select a saved search. At step 188, the program guide may display a list of programs based on a search of currently available program listings with saved search parameters from an earlier search.

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At step 190, the program guide may provide the user with an opportunity to delete a saved search from the list of saved searches. At step 192, the program guide may delete a particular saved search when the user selects to delete that particular saved search.

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At step 194, the program guide may provide the user with an opportunity to select an option to view user-configured search parameters for a saved search. At step 196, the program guide may display a display screen having user-configured search parameters for a saved search when the user selects to view user-configured search parameters for that saved search. If desired, step 196 may include a step that provides the user with the opportunity to modify the save searches.

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At step 198, the program guide may provide the user with an opportunity to set (or remove) an automatic notification for programs that have been located using a saved search. At step 200, the program guide may display a notice that a located program is scheduled to air when the user has selected to receive

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automatic notifications. If desired, step 200 may include a step that provides the user with the opportunity to act on it.

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Illustrative saved searches display screen 202 and illustrative related-program find display screen 204 of FIG. 12 may be provided based on the illustrative steps of FIG. 11. Saved searches display screen 202 may include a list of saved searches and corresponding options, including a search option, for each saved search. The program guide may display related program find display screen 204 when the users selects the search option for Search #4. Related program find display screen 204 may include a list of current program listings based on the user-configured search parameters for Search #4.

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Illustrative saved searches display screens 206 and 208 of FIG. 13 may be provided based on the illustrative steps of FIG. 11. The program guide may display saved searches display screen 206 that includes a delete option for Search #3. The program guide may display saved searches display screen 208 that does not include Search #3 when the user selects the delete option for Search #3.

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Illustrative display screen 214 and illustrative saved searches display screens 210 and 212 of FIG. 14 may be provided based on the illustrative steps of FIG. 11. The program guide may display saved searches display screen 210 that includes an automatic notification option for saved searches including Search #5. The automatic notification option for search #5 may initially be off. The program guide may display saved searches display screen 212 that includes an indication that the automatic notification for Search #5 is on when the user selects the automatic

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notification option for Search #5 from display screen 210. After the user exits saved searches display screen 212 and resumes watching television, the program guide may display automatic notification overlay 216 in

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5 display screen 214 when the program guide locates a program (e.g., the movie Terminator) using the user-configured search parameters for Search #5. If desired, the program guide may provide a notification display screen for the located program. The
10 notification may be displayed when the program is about to air or is airing. The overlay 216 may include a tune option (for tuning to the channel airing that
20 program), an information option (for display further information on that program), a saved searches option
25 (for displaying a saved searches display screen), an order option (for ordering programs), etc.

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Illustrative saved searches display screen 218 and illustrative saved search configuration display screen 220 of FIG. 15 may be provided based on the
20 illustrative steps of FIG. 11. The program guide may display saved searches display screen 220 having an
35 option that provides the user with an opportunity to view search parameters for saved searches. The program guide may display saved search configuration display
40 screen 222 for Search #3 when the user selects the option to view search parameters for Search #3. Saved search configuration display screen 222 may display the
45 saved user-configured search parameters for Search #3, a modify configuration option (to allow the user to
30 adjust the search parameters), and a search option (to search the current program listings based on the user-configured search parameters). If desired, the program
50 guide may provide the user with an opportunity to modify the settings on this screen by highlighting and

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changing them, rather than having to first select a
"modify" option.

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Illustrative saved searches display screen
224 and illustrative saved search configuration display
5 screen 226 of FIG. 16 may be provided based on the
illustrative steps of FIG. 11. The program guide may
display saved searches display screen 224 that includes
a list of saved searches when a user selects a saved
searches option (e.g., saved searches option 182 of
10 FIG. 10b). The program guide may display saved search
configuration display screen 226 when the user selects
a saved search from saved searches display screen 224.
Saved search configuration display screen 226 may
include on-screen search settings for the selected
15 saved search. The program guide may provide the user
with an opportunity to navigate to any of the settings
and to modify them. Saved search configuration,
display screen 226 may include search option 228 that
when selected, causes the program guide to display a
20 list of matching programs, rename option 230 that
allows the user to enter a name (or modify the name)
for the selected saved search, delete option 232 that
when selected, deletes the selected save search,
automatic notification option 234 that provides an
25 automatic notification of programs matching the
selected saved search, etc. Automatic Notification
option 234 may include an indicator 236 to indicate
that option 234 is on.

The foregoing is merely illustrative of the
30 principles of this invention and various modifications
can be made by those skilled in the art without
departing from the scope and spirit of the invention.

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Claims

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What is Claimed is:

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1. A method for searching for television program listings, comprising:
providing a user with an opportunity to indicate an interest in a given program;
displaying an on-screen list of attributes related to the program;
providing the user with an opportunity to select one of the attributes; and
displaying a list of program listings related to the selected attribute.

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2. The method defined in claim 1, wherein providing the user with the opportunity to indicate an interest in the given program comprises providing the user with an opportunity to select a program listing for the given program from an on-screen display of program listings.

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3. The method defined in claim 1, wherein providing the user with the opportunity to indicate an interest in the given program comprises providing the user with an opportunity to indicate an interest in a program that is currently being displayed.

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4. The method defined in claim 1, further comprising:

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providing the user with an opportunity to select a plurality of attributes; and
displaying in the list program listings that are related to the selected attributes.

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5. The method defined in claim 1, further comprising providing the user with an opportunity to select program listings from the list.

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6. An interactive television program guide system for searching for television program listings, comprising:

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user television equipment on which an interactive television program guide is at least partially implemented, wherein the user television equipment is configured to provide a user with an opportunity to indicate an interest in a given program, to display an on-screen list of attributes related to the program, to provide the user with an opportunity to select one of the attributes, and to display a list of program listings related to the selected attribute.

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7. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with the opportunity to indicate an interest in the given program by being configured to provide the user with an opportunity to select a program listing for the given program from an on-screen display of program listings.

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8. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with the opportunity to indicate an interest in the given program by being configured to provide the user with an opportunity to indicate an interest in a program that is currently being displayed.

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9. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with an opportunity to select a plurality of attributes, and to display in the list program listings that are related to the selected attributes.

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10. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with an opportunity to select program listings from the list.

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11. A method for use in an interactive television program guide system having user television equipment and a remote control for interfacing with said user television equipment, said method being for searching for programs, comprising:

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displaying a display screen that includes a video for a given program;

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allowing the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to locate program listings related to the given program; and

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displaying a display screen including the program listings located by the system.

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12. The method defined in claim 11, further comprising sorting the program listings located by the system for display.

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13. The method defined in claim 11, further comprising providing the user with an opportunity to select any of the displayed program listings.

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14. The method defined in claim 13, further comprising tuning to a particular program when the user selects a listing for the particular program from the displayed listings.

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15. The method defined in claim 13, further comprising tuning to a current program when the user selects a particular one of the displayed listings that lists a current program.

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16. The method defined in claim 13, further comprising displaying an information display screen that contains information related to a particular one of the displayed listing when the user selects that particular listing.

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17. The method defined in claim 11, further comprising locating programs based on attributes of the given program.

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18. An interactive television program guide system for searching for programs, comprising:

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a remote control that is configured to interface with user television equipment;

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user television equipment on which an interactive television program guide is at least partially implemented, wherein the user television equipment is configured to display a display screen that includes a video for a given program, to allow the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to locate program listings related to the given program, and to display a

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display screen that includes the program listings located by the system.

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19. The system defined in claim 18, wherein the user television equipment is further configured to sort the program listings located by the system for display.

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20. The system defined in claim 18, wherein the user television equipment is further configured to provide the user with an opportunity to select any of the displayed program listings.

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21. The system defined in claim 20, wherein the user television equipment is further configured to tune to a particular program when the user selects a listing for the particular program from the displayed listings.

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22. The system defined in claim 20, wherein the user television equipment is further configured to tune to a current program when the user selects a particular one of the displayed listings that lists a current program.

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23. The system defined in claim 20, wherein the user television equipment is further configured to display an information display screen that contains information related to a particular one of the displayed listing when the user selects that particular listing.

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24. The system defined in claim 18, wherein the user television equipment is further configured to

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locate programs based on attributes of the given program.

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25. A method for use in an interactive television program guide system having user television equipment and a remote control for interfacing with said user television equipment, said method being for searching for programs, comprising:

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displaying a display screen that includes a video for a given program;

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allowing the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to display a display screen containing a plurality of program attributes for the given program;

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providing the user with an opportunity to assign various importance levels to the program attributes on the display screen; and

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displaying a selectable search option on the same display screen as the program attributes and assigned importance levels that the user selects to direct the program guide system to locate program listings related to the given program based on the program attributes and their assigned importance levels.

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26. The method defined in claim 25, further comprising providing the user with an opportunity to have the program guide system save the plurality of program attributes for the given program.

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27. The method defined in claim 26, further comprising providing the user with an opportunity to have the program guide system save the plurality of

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program attributes for the given program and their assigned importance levels.

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28. The method defined in claim 26, further comprising providing the user with an opportunity to delete the saved plurality of program attributes for the given program.

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29. The method defined in claim 25, further comprising displaying a list of program listings that the program guide system located based on the attributes and their assigned importance levels.

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30. The method defined in claim 29 further comprising providing the user with an opportunity to select program listings from the list.

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31. The method defined in claim 30, further comprising displaying information related to a particular program listing that has been selected from the list.

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32. The method defined in claim 30, further comprising tuning to a particular program when a listing for the particular program is selected from the list.

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33. An interactive television program guide system, comprising:

a remote control that is configured to interface with user television equipment; and

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user television equipment on which an interactive television program guide is at least partially implemented, wherein the user television

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equipment is configured to display a display screen that includes a video for a given program, to allow the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to display a display screen containing a plurality of program attributes for the given program, to provide the user with an opportunity to assign various importance levels to the program attributes on the display screen, and to display a selectable search option on the same display screen as the program attributes and assigned importance levels that the user selects to direct the program guide system to locate program listings related to the given program based on the program attributes and their assigned importance levels.

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34. The system defined in claim 33, wherein the user television equipment is further configured to provide the user with an opportunity to have the program guide system save the plurality of program attributes for the given program.

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35. The system defined in claim 34, wherein the user television equipment is further configured to provide the user with an opportunity to have the program guide system save the plurality of program attributes for the given program and their assigned importance levels.

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36. The system defined in claim 34, wherein the user television equipment is further configured to provide the user with an opportunity to delete the saved plurality of program attributes for the given program.

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37. The system defined in claim 33, wherein the user television equipment is further configured to display a list of program listings that the program guide system located based on the attributes and their assigned importance levels.

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38. The system defined in claim 37, wherein the user television equipment is further configured to provide the user with an opportunity to select program listings from the list.

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39. The system defined in claim 38, wherein the user television equipment is further configured to display information related to a particular program listing that has been selected from the list.

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40. The system defined in claim 38, wherein the user television equipment is further configured to tune to a particular program when a listing for the particular program is selected from the list.

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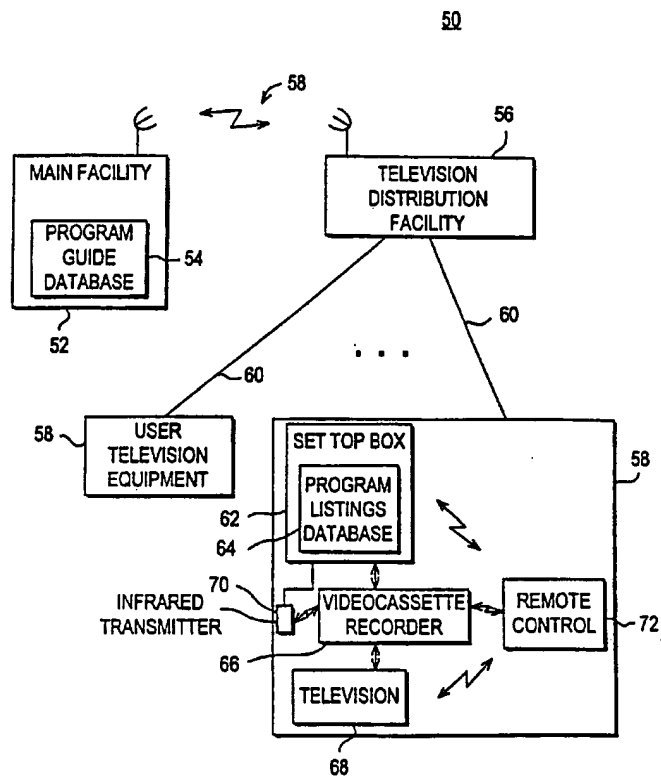


FIG. 1

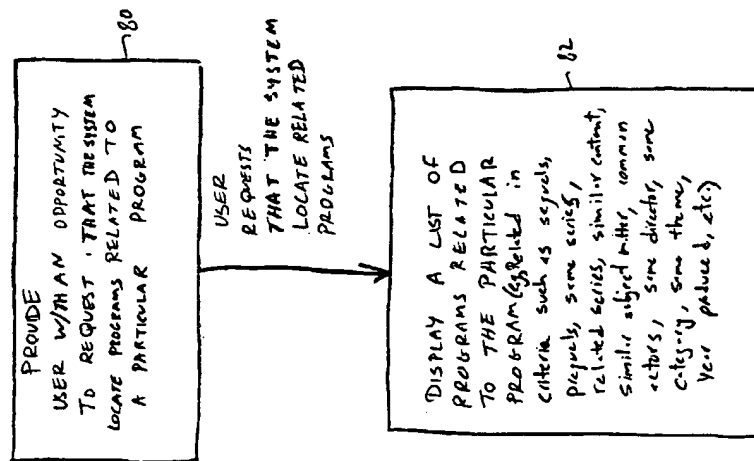


FIG. 2

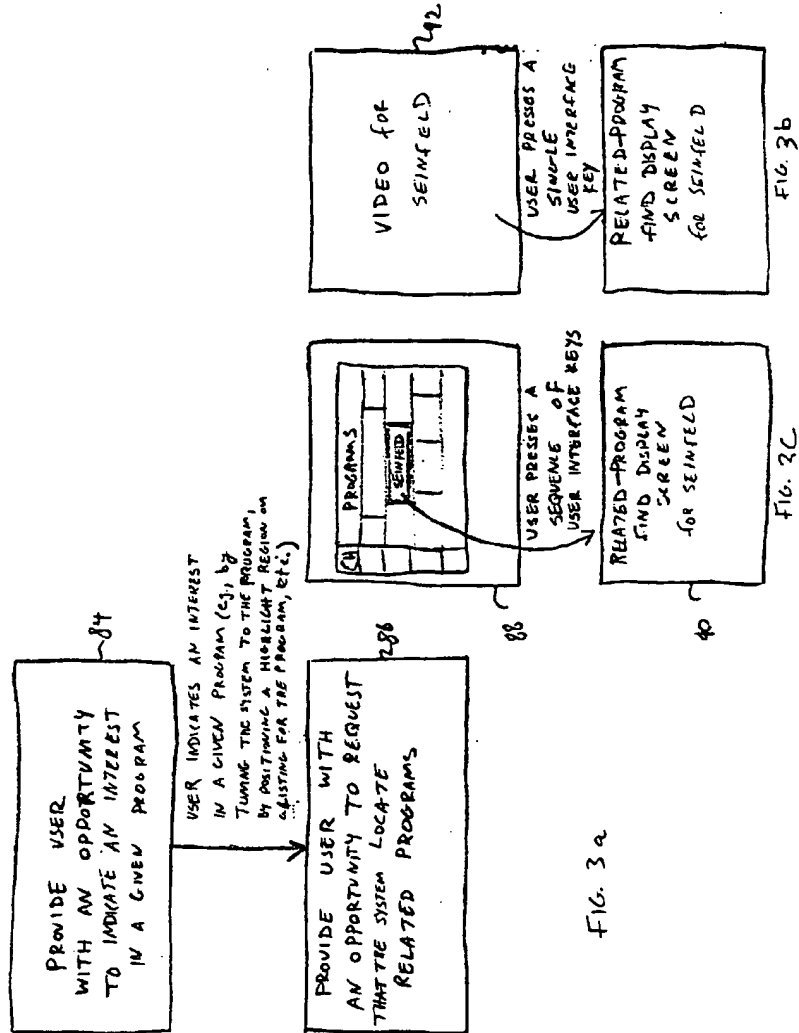


FIG. 3a

FIG. 3b

FIG. 3c

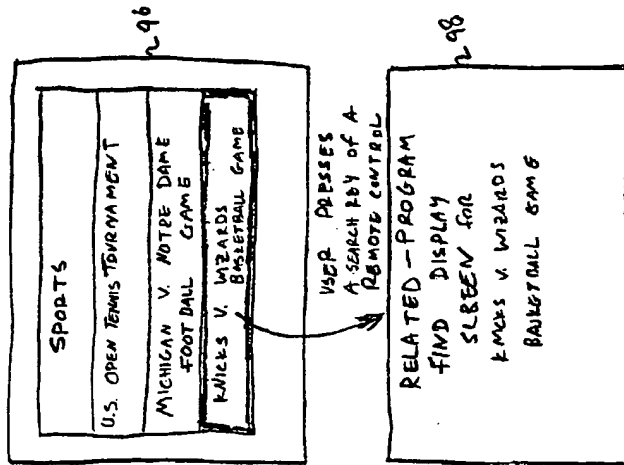


FIG. 3d

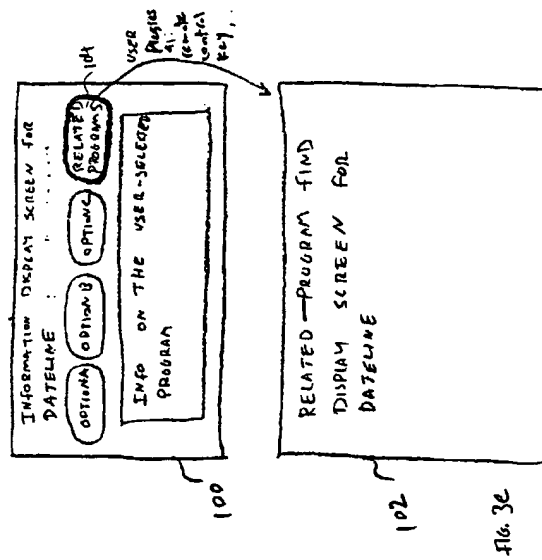


FIG. 3e

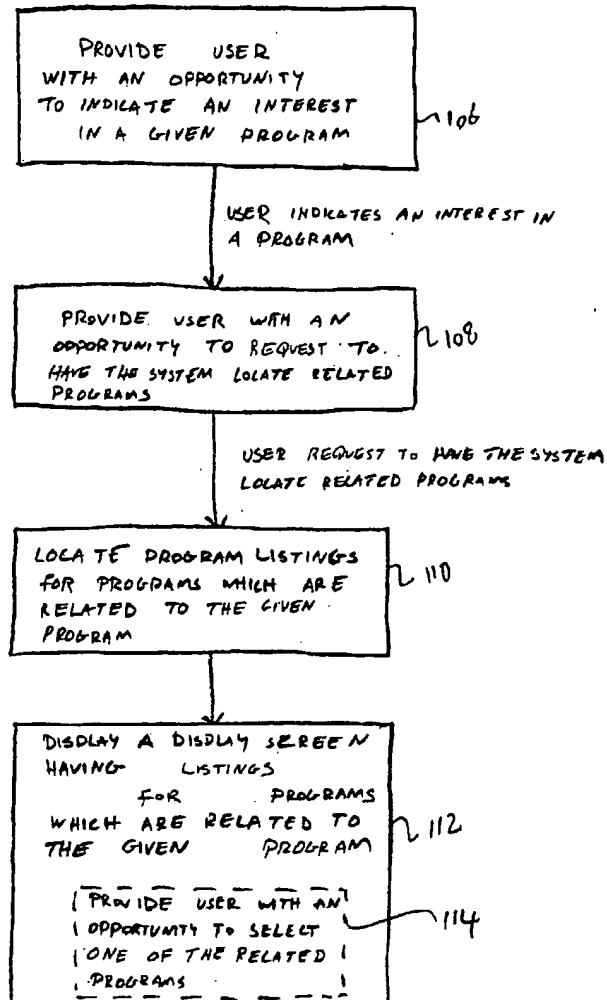


FIG. 4

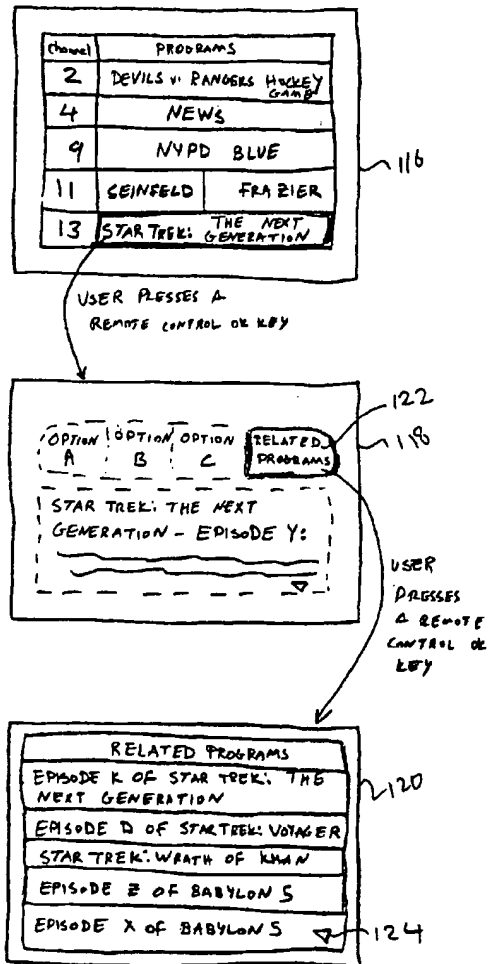
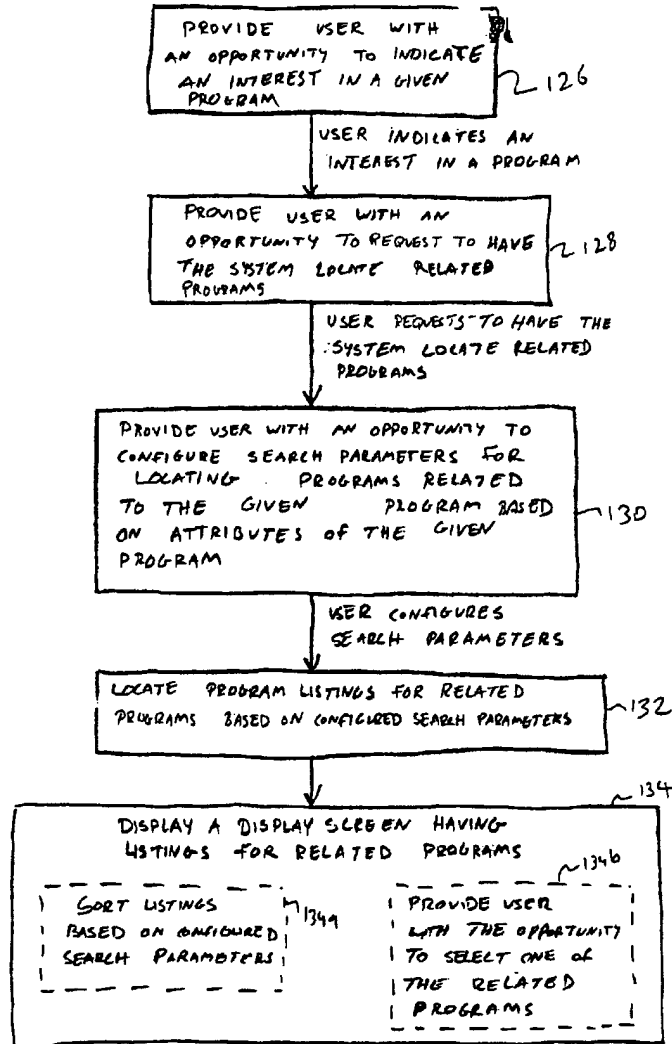


FIG. 5

FIG. 6



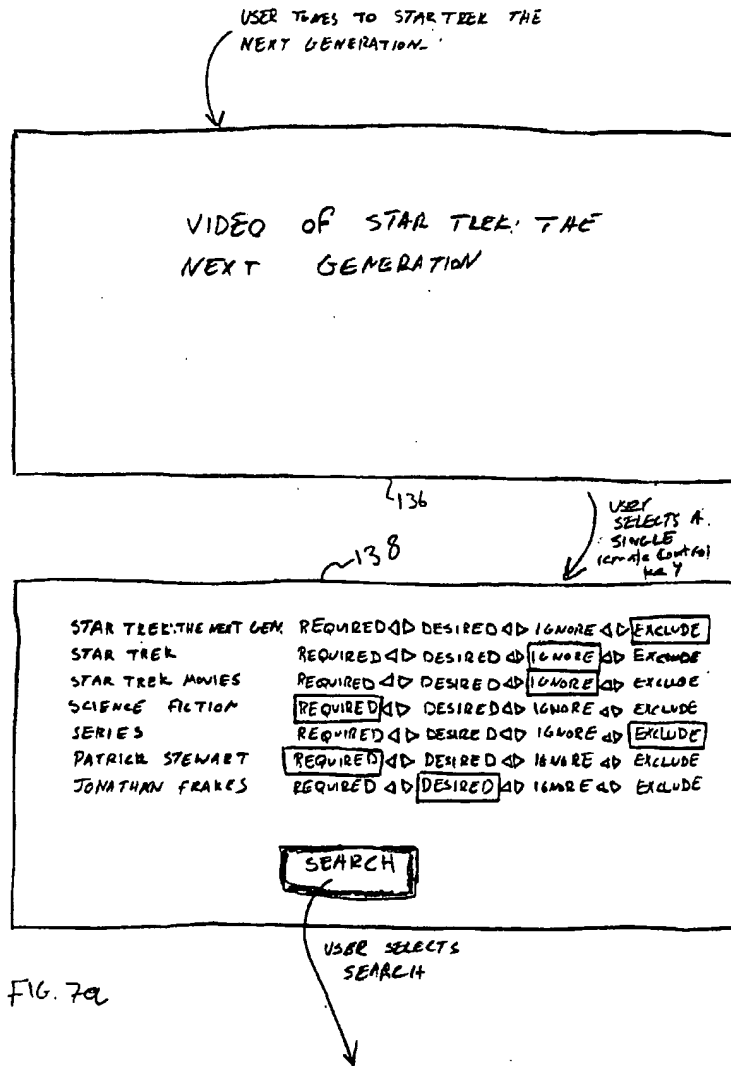


FIG. 7a

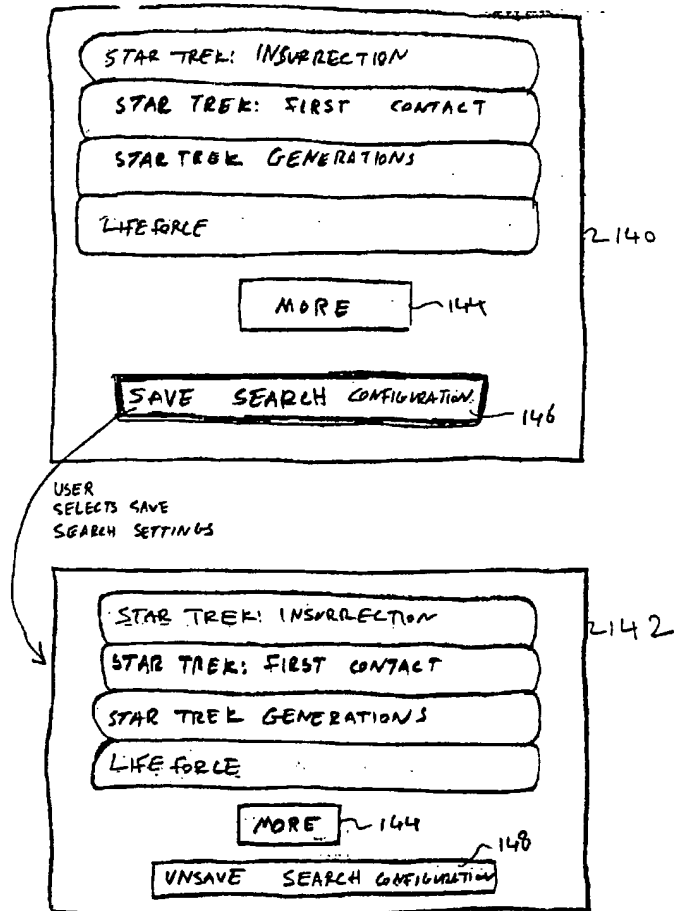
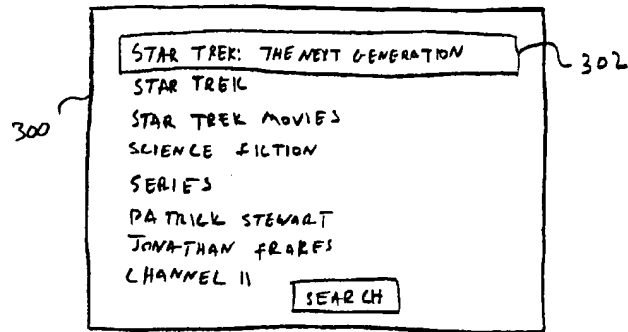


FIG. 7b



USER SELECTS "STAR TREK MOVIES"
AND "PATRICK STEWART"
ATTRIBUTES

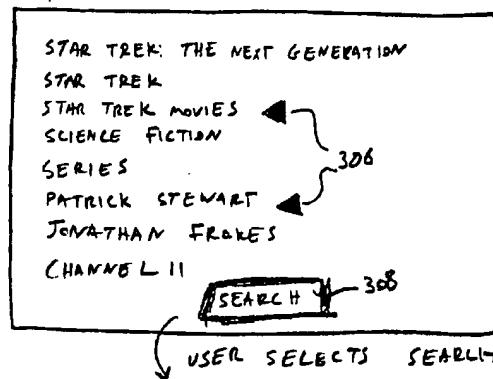


FIG. 7C

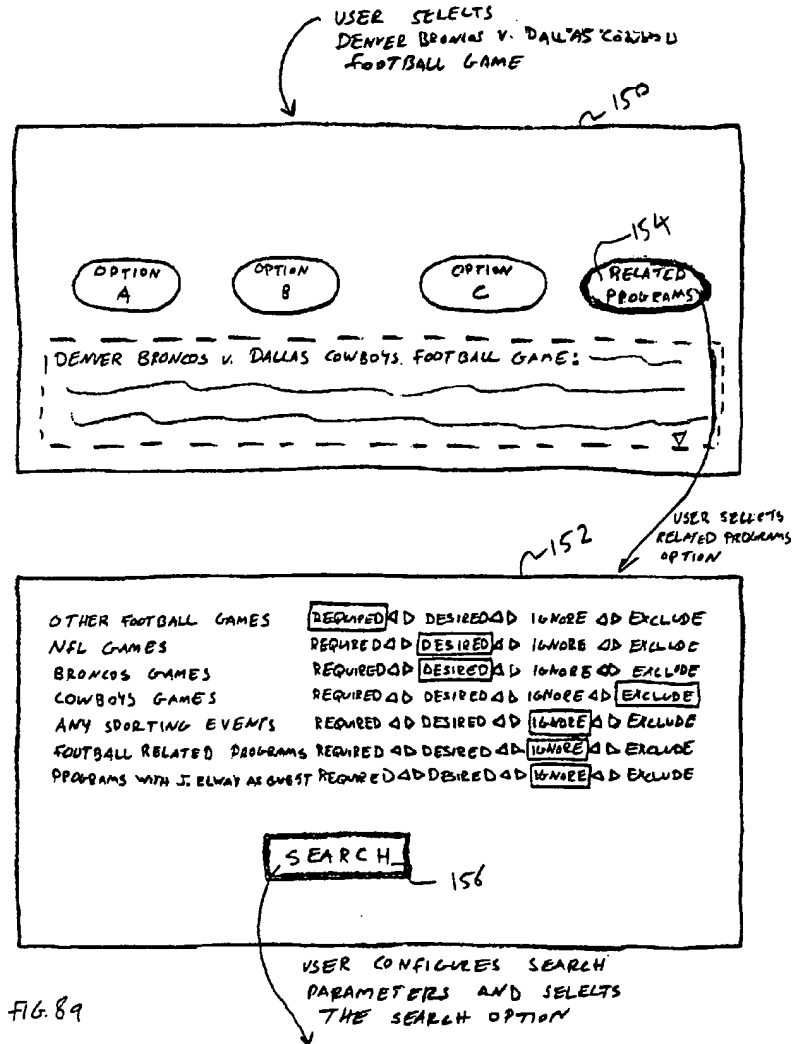


FIG. 89

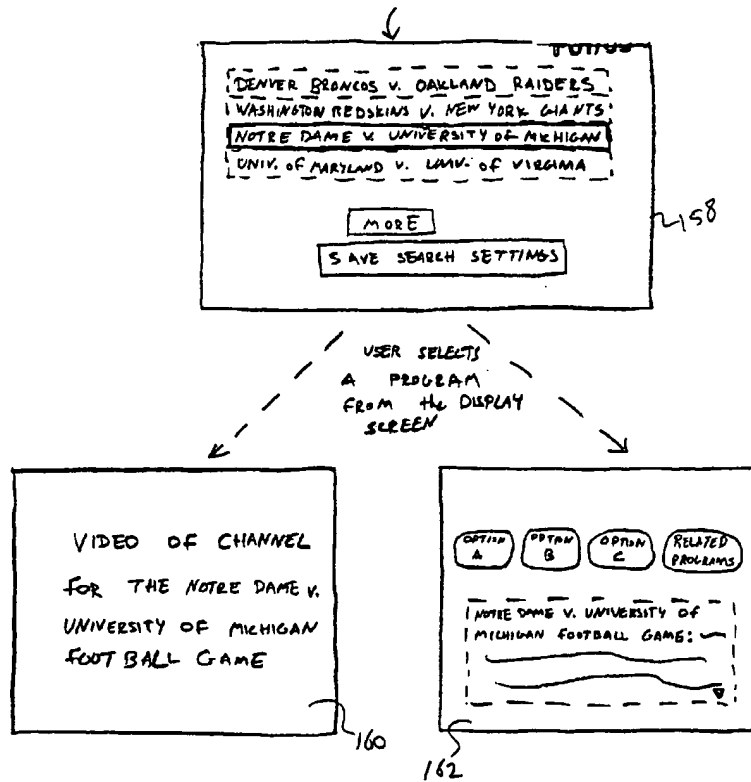


FIG. 8b

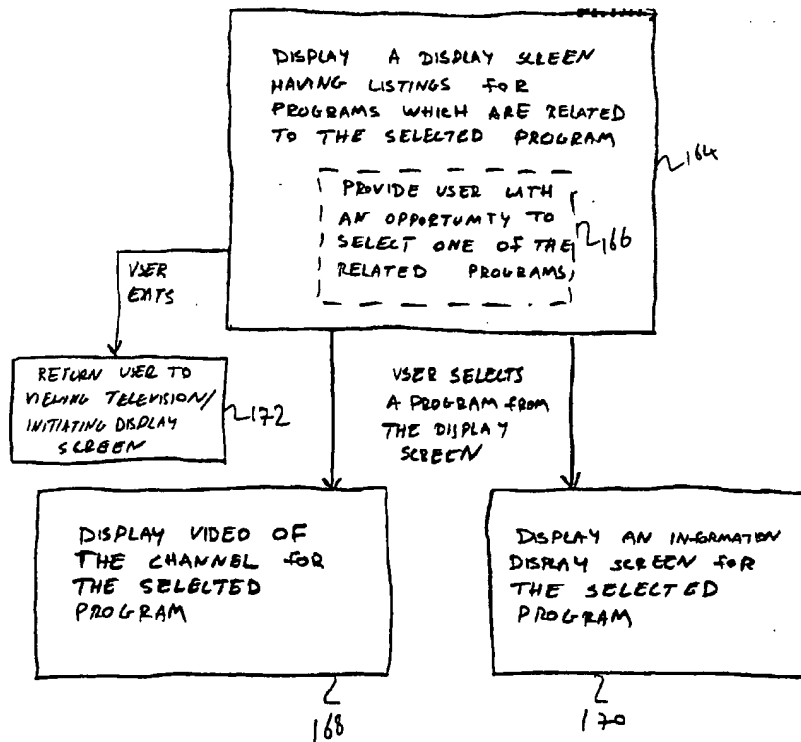
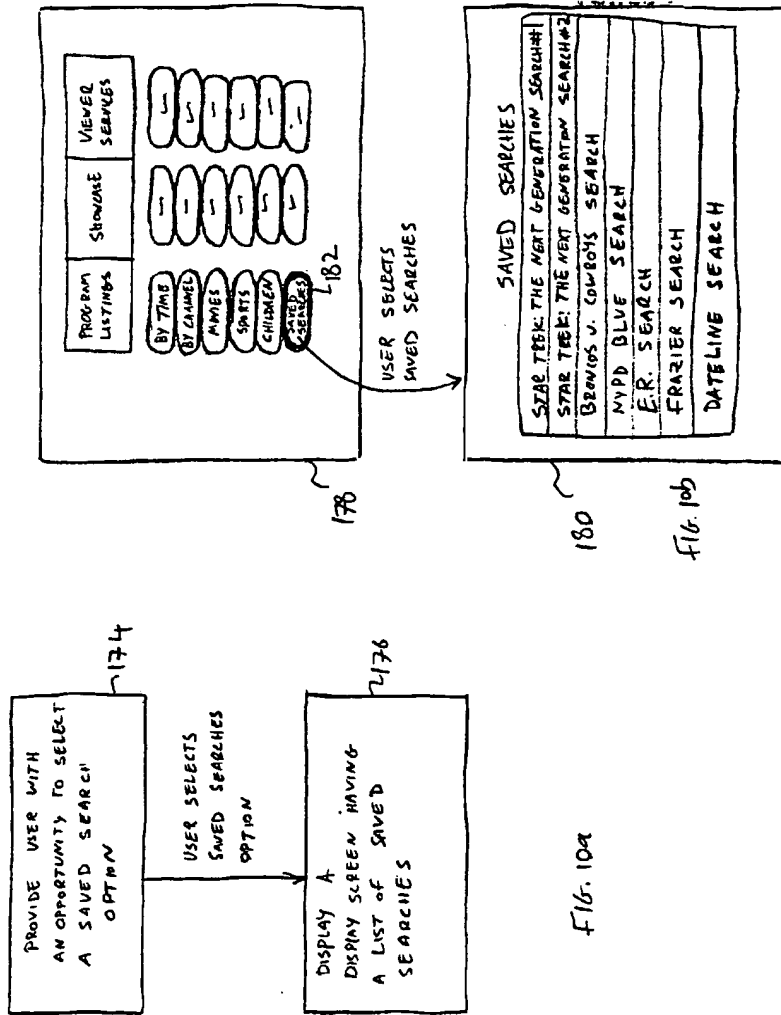
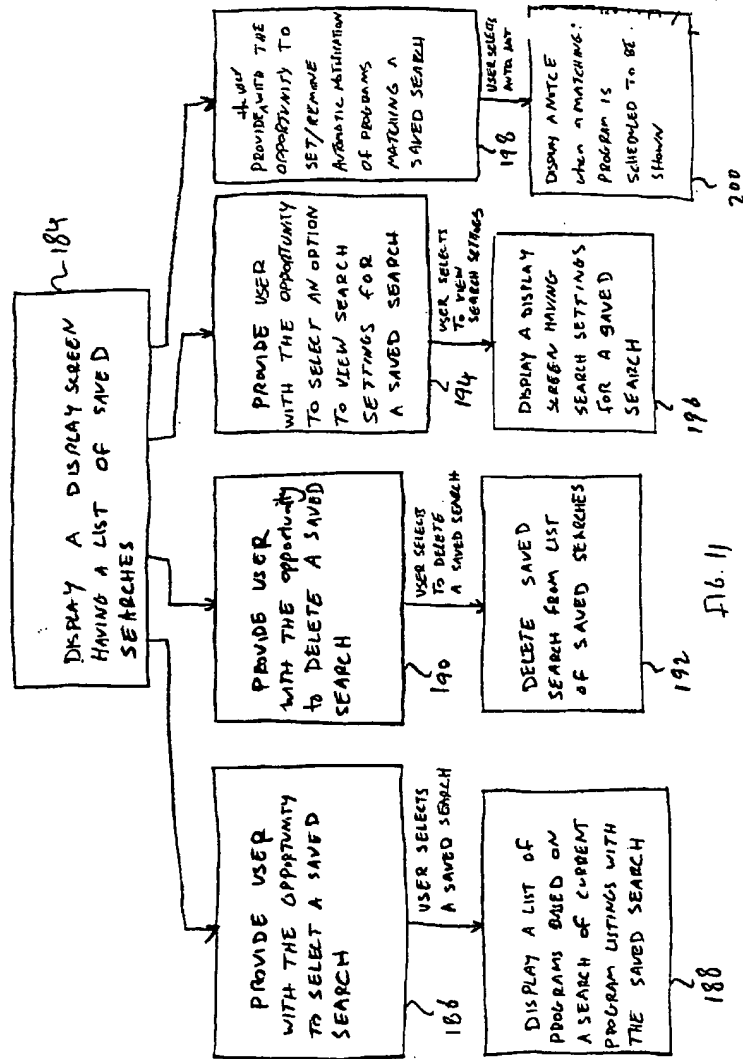


FIG. 9





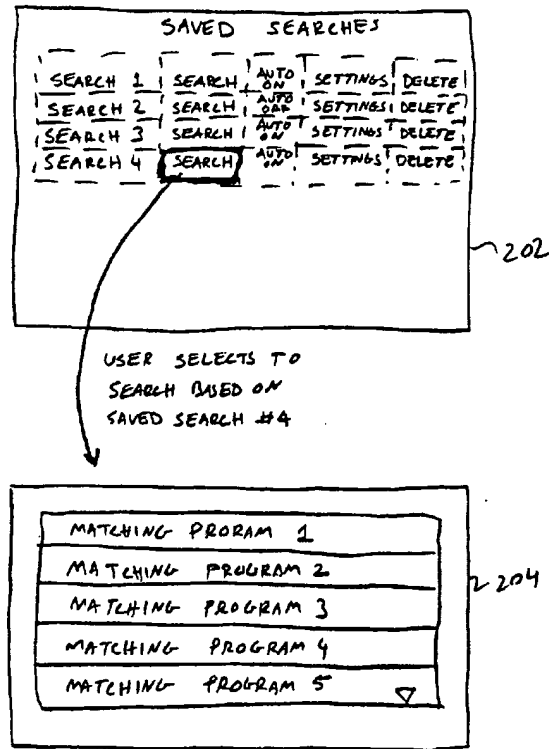


FIG. 12

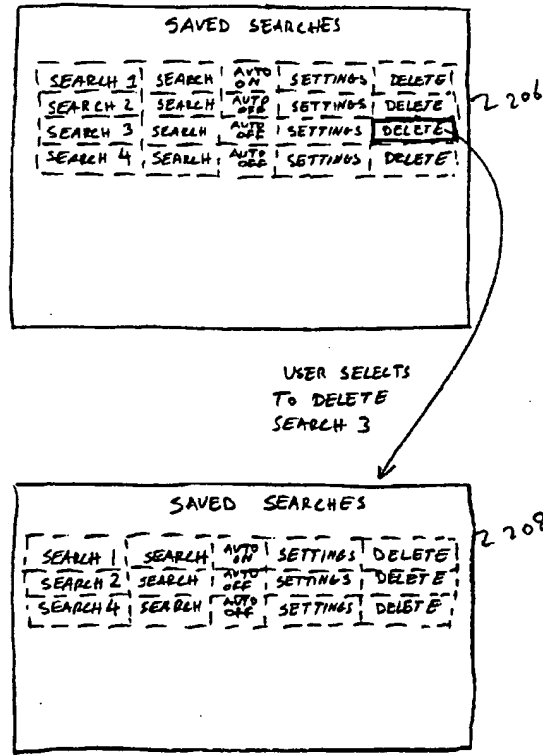


FIG. 13

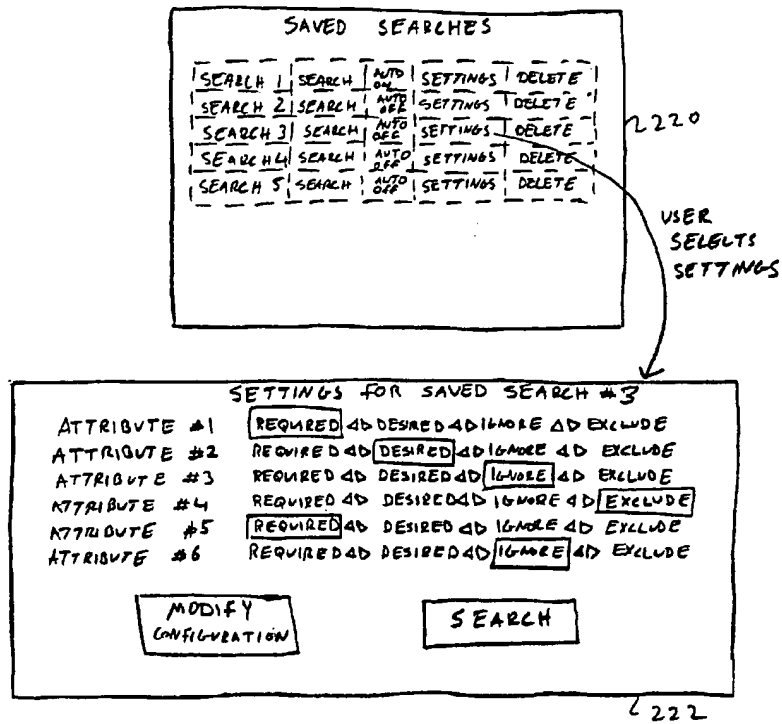


FIG. 15

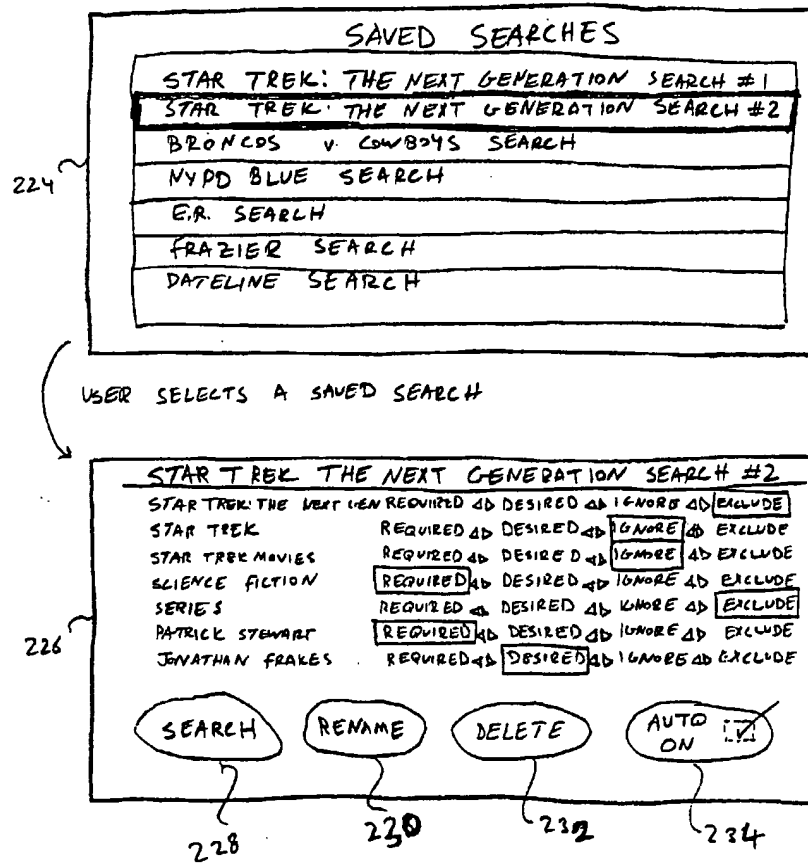


FIG 16

INTERNATIONAL SEARCH REPORT

International / option No
PCT/US 99/28402

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 854 645 A (TEXAS INSTRUMENTS INC) 22 July 1998 (1998-07-22) column 2, line 13 - line 26 column 10, line 12 -column 19, line 33; figures 3-5	1,2,4,6 7,9,11, 18,25,33
X A	US 5 617 565 A (AUGENBRAUN JOSEPH E ET AL) 1 April 1997 (1997-04-01) column 5, line 62 -column 6, line 55; claim 1	1,6 2-4,7-40
X A A	WO 97 48230 A (STARSIGHT TELECAST INC) 18 December 1997 (1997-12-18) page 2, line 10 - line 11 page 15, line 34 -page 23, line 29; claims 1,2,15; figures 7-12	1,6 2-40 11
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☒ Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search

9 May 2000

Date of mailing of the international search report

16/05/2000

Name and mailing address of the ISA

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2

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INTERNATIONAL SEARCH REPORT

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PCT/US 99/28402

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 721 253 A (SONY ELECTRONICS INC) 10 July 1996 (1996-07-10)	11,18
A	column 2, line 5 -column 3, line 3	14,15, 21,22, 25,33
	column 6, line 48 -column 7, line 11; figure 4	
A	—	25,33
A	EP 0 774 866 A (THOMSON CONSUMER ELECTRONICS) 21 May 1997 (1997-05-21) column 1, line 1 - line 41 column 3, line 24 -column 5, line 27; figure 4	11,18, 25,33
	—	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/28402

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0854645 A	22-07-1998	JP 10207914 A SG 67469 A	07-08-1998 21-09-1999
US 5617565 A	01-04-1997	US 5797001 A US 5857181 A	18-08-1998 05-01-1999
WO 9748230 A	18-12-1997	AU 3294997 A	07-01-1998
EP 0721253 A	10-07-1996	US 5596373 A BR 9600018 A CA 2166434 A CN 1142161 A	21-01-1997 21-01-1998 05-07-1996 05-02-1997
EP 0774866 A	21-05-1997	US 5867226 A BR 9605543 A JP 9200638 A SG 49982 A	02-02-1999 11-08-1998 31-07-1997 15-06-1998

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(19) World Intellectual Property Organization
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8 June 2000 (08.06.2000)

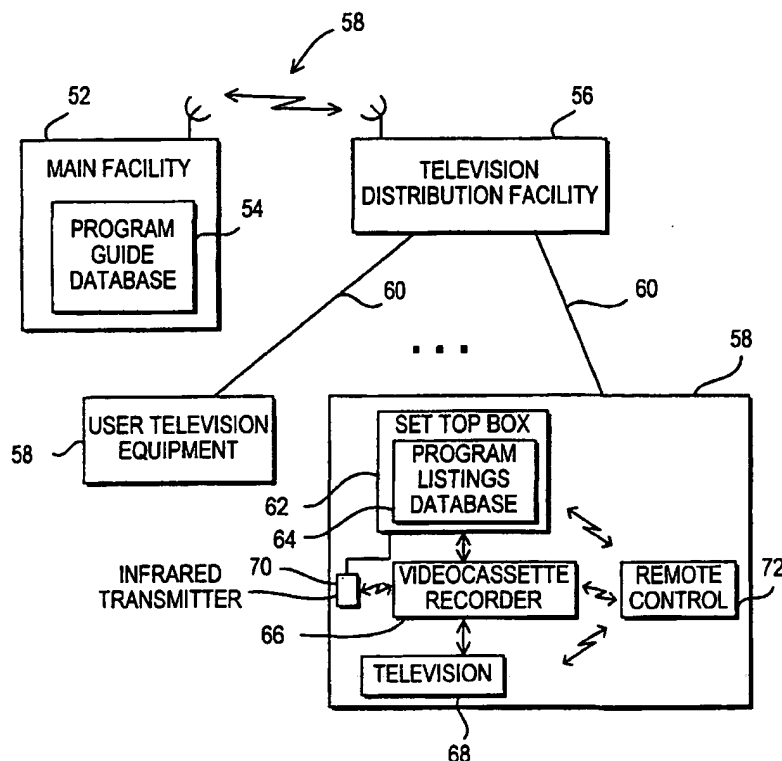
PCT

(10) International Publication Number
WO 00/33573 A1

- (51) International Patent Classification⁷: H04N 5/445 (72) Inventors: HERRINGTON, W., Benjamin; 725 W. 20th Street, Tulsa, OK 74107 (US). ELLIS, Michael, D.; 1300 Kingwood Place, Boulder, CO 80304 (US).
- (21) International Application Number: PCT/US99/28402
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- (25) Filing Language: English (81) Designated States (*national*): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (26) Publication Language: English
- (30) Priority Data: 60/110,989 3 December 1998 (03.12.1998) US (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent

[Continued on next page]

(54) Title: ELECTRONIC PROGRAM GUIDE WITH RELATED-PROGRAM SEARCH FEATURE



(57) Abstract: A system for searching for programs is provided. The system may be provide the user with an opportunity to indicate an interest in a given program. The system may provide the user with an opportunity to request that the system locate programs that are related to the given program in which the user has indicated an interest. The system may locate program listings that are related to the given program. The located program listings may be related to the given program based on attributes of the given program. The system may display a list of located listings and allow the user to select listings from the list. The system may tune to a program selected from the list, may display an information display screen for a program selected from the list, etc. The system may provide the user with an opportunity to configure and save search parameters. The system may sort related program listings based on the attributes of the given program. The system may provide the user with the opportunity to retrieve saved searches to locate currently available program listings and the

opportunity to delete a saved search, rename a saved search, receive automatic notifications of programs matching a saved search, etc.

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(AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(15) Information about Correction:

see PCT Gazette No. 28/2001 of 12 July 2001, Section II

Published:

— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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12 July 2001

ELECTRONIC PROGRAM GUIDE WITH
RELATED-PROGRAM SEARCH FEATURE

Background of the Invention

This invention relates to interactive
5 television systems such as interactive television
program guide systems, and more particularly, to
techniques for program searching in these systems.

Cable, satellite, and broadcast television
systems provide a large number of television channels.
10 Typically, the number of channels provided by cable and
satellite systems is over a hundred and ever
increasing. Television viewers have traditionally
consulted printed television program schedules to
obtain programing information. More recently,
15 interactive electronic television program guides have
been developed to allow television program information
to be displayed on viewer television equipment.

Interactive electronic television program
guides ("program guides") typically provide program
20 listings for all channels available in the television
system. Some program guides include features for
allowing users to search for programs. Such search

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features are often complex, time-consuming, and cumbersome. For example, such search features may require that a user select search parameters such as preferred programming genres before searching for programs, that a user navigate through several display screens before being allowed to initiate a search, that the user enter at least a portion of a program title to initiate a search, etc.

It is therefore an object of the present invention to provide a television system that includes an improved program searching feature.

Summary of the Invention

These and other objects of the invention are accomplished in accordance with the principles of the present invention by providing a system for searching for programs. The system may provide the user with an opportunity to indicate an interest in a given program. The system may provide the user with an opportunity to request that the system locate programs that are related to the given program in which the user indicated an interest. The system may locate program listings that are related to the given program. The located program listings may be related to the given program based on attributes of the given program.

The system may display a list of the located program listings. The system may provide the user with an opportunity to select from the list of related programs. The system may tune to a program selected from the list, may display an information display screen for a program selected from the list, etc.

The system may provide the user with an opportunity to configure search parameters. For example, The system may present the user with a list of

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attributes for the given program and may allow the user to select one or more attributes and may allow the user to select which logical operations (e.g., and/or operations) are to be performed on the attributes. The
5 system may search television program listings and may display a list of related programs based on the selected attributes.

The system may sort related program listings based on the attributes of the given program. The
10 system may provide the user with an opportunity to save search parameters for use at a later time. The system may display a list of previously saved searches and may provide the user with an opportunity to direct the system to locate currently available program listings
15 based on a saved search from the list. The system may locate currently available listings based on the user-selected search parameters from the saved search when the saved search is retrieved. The system may allow the user to delete a saved search. The system may
20 automatically display a notification based on user-selected search parameters from a saved search. The system may provide the user with an opportunity to view the user-selected search parameters for a saved search.

Further features of the invention, its nature
25 and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

Brief Description of the Drawings

FIG. 1 is a diagram of an illustrative
30 interactive television program guide system in accordance with the present invention.

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FIG. 2 is a flow chart of illustrative steps involved in providing program searching in accordance with the present invention.

FIG. 3a is a flow chart of illustrative steps
5 involved in providing an opportunity to request that the system locate programs related to a given program in accordance with the present invention.

FIG. 3b is a diagram of an illustrative sequence of illustrative display screens for providing
10 an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

FIG. 3c is a diagram of an illustrative sequence of illustrative display screens for providing
15 an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

FIG. 3d is a diagram of an illustrative sequence of illustrative display screens for providing
20 an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

FIG. 3e is a diagram of an illustrative sequence of illustrative display screens for providing
25 an opportunity to request that the system locate programs that are related to a given program in accordance with the present invention.

FIG. 4 is a flow chart of illustrative steps involved in displaying program listings that are
30 related to a given program in accordance with the present invention.

FIG. 5 is a diagram of an illustrative sequence of illustrative display screens for displaying

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program listings that are related to a given program in accordance with the present invention.

FIG. 6 is a flow chart of illustrative steps involved in displaying program listings that are
5 related to a given program based on user-selected search parameters in accordance with the present invention.

FIG. 7a is a diagram of an illustrative sequence of illustrative display screens for searching
10 for program listing that are related to a given program based on user-selected search parameters in accordance with the present invention.

FIG. 7b is a diagram of an illustrative sequence of illustrative display screens for displaying
15 program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

FIG. 7c is a diagram of an illustrative sequence of illustrative display screens for searching
20 for program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

FIG. 8a is a diagram of an illustrative sequence of illustrative display screens for searching
25 for program listings that are related to a given program based on user-selected search parameters in accordance with the present invention.

FIG. 8b is a diagram of an illustrative sequence of illustrative display screens for selecting
30 a program listing that is related to a user-selected program in accordance with the present invention.

FIG. 9 is a flow chart of illustrative steps involved in providing display screens when a user makes

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selections from a related-program find display screen in accordance with the present invention.

FIG. 10a is a flow of illustrative steps involved in displaying a display screen having a list
5 of saved searches in accordance with the present invention.

FIG. 10b is a diagram of an illustrative sequence of illustrative display screens for providing a display screen having a list of saved searches in
10 accordance with the present invention.

FIG. 11 is flow chart of illustrative involved in providing saved search features in accordance with the present invention.

FIG. 12 is a diagram of an illustrative
15 sequence of illustrative display screens for searching for program listings based on a saved search in accordance with the present invention.

FIG. 13 is a diagram of an illustrative sequence of illustrative display screens for deleting a
20 saved search in accordance with the present invention.

FIG. 14 is a diagram of an illustrative sequence of illustrative display screens for providing an automatic notification of a program matching a saved search in accordance with the present invention.

25 FIG. 15 is a diagram of an illustrative sequence of illustrative display screens for displaying search parameters for a saved search in accordance with the present invention.

FIG. 16 is a diagram of an illustrative
30 sequence of illustrative display screens for providing save search features in accordance with the present invention.

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Detailed Description of the Preferred Embodiments

An illustrative interactive television program guide system 50 in accordance with the present invention is shown in FIG. 1. Main facility 52
5 includes a program guide database 54 for storing program guide information (e.g., television program listings data, program-related information, service listings data, service-related information, pay-per-view ordering information, television program
10 promotional information, etc.).

Main facility 52 preferably includes a processor to handle information distribution tasks. Information from database 54 may be transmitted in parallel via communications links such as
15 communications link 58 to multiple television distribution facilities such as television distribution facility 56. Only one television distribution facility is shown in FIG. 1 to avoid over complicating the drawings. Each communications link 58 may be a
20 satellite link, a telephone network link, a combination of such links, or another suitable communications path. Text, graphics, and video data signals may be transmitted over link 58. If it is desired to transmit video signals over communications link 58, a relatively
25 high bandwidth link such as a satellite link is generally preferable to a relatively low bandwidth link such as a telephone line.

Television distribution facility 56 is a facility such as a cable system headend, a broadcast
30 distribution facility, or a satellite television distribution facility for distributing television signals to viewers.

The program guide information transmitted by main facility 52 to television distribution facility 56

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includes television program listings data such as program times, channels, titles, descriptions, program type, genre, actors, etc. Transmitted program guide information may include pay program data such as
5 pricing information for individual programs and subscription channels, time windows for ordering programs and channels, telephone numbers for placing orders that cannot be impulse ordered, etc.

Television distribution facility 56 may
10 distribute program guide information received from main facility 52 to user television equipment 58 via communications paths 60. User television equipment 58 may be any suitable equipment for providing television that contains sufficient processing capabilities to
15 monitor viewing activities, analyze these activities and display appropriate program listings information for the user.

Communications paths 60 may be cable links, fiber optic links, satellite links, broadcast links, or
20 other suitable link, or a combination of such links. Any suitable communications scheme may be used to transmit data over paths 60, including in-band transmissions, out-of-band transmissions, digital transmissions, analog transmissions, cable
25 transmissions, satellite transmissions, over-the-air transmissions, multichannel multipoint distribution services (MMDS) transmissions, etc.

Communications paths 60 preferably have sufficient bandwidth to allow television distribution
30 facility 56 to distribute television programming, program listings information, advertisements, and other information to user television equipment 58. Multiple television and audio channels (analog, digital, or both analog and digital) may be provided to user television

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equipment 58 via communication paths 60. If desired, some of the data may be distributed to user television equipment 58 by one or more distribution facilities that are separate from television distribution facility
5 56 using communication paths that are at least partly separate from communication paths 60.

The data distribution technique that is used to distribute data on paths 60 may depend on the type of information that is being distributed. For example,
10 text and graphics may be distributed over an out-of-band channel using an out-of-band modulator or distributed in the vertical blanking interval lines of an analog video channel. Video information may also be distributed in this way, although large quantities of
15 video information may be more efficiently distributed using one or more digital channels or streams on paths 60. Such digital channels or streams may also be used for distributing text and graphics.

Each user television equipment device 58 has
20 a receiver which is typically a set-top box such as set-top box 62. The receiver may also be other suitable television equipment such as an advanced television receiver into which circuitry similar to set-top-box circuitry has been integrated or a personal
25 computer television (PC/TV). For illustrative purposes, the present invention will be described in the context of user television equipment 58 that uses set-top boxes.

Each set-top box 62 is typically connected to
30 an optional videocassette recorder 66 so that selected television programs may be recorded. Videocassette recorder 66 is typically connected to a television 68. To record a program, set-top box 62 tunes to a particular channel and sends control signals to

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videocassette recorder 66 (e.g., using infrared transmitter 70) that instructs videocassette recorder 66 to start and stop recording at the appropriate times.

5 Television program listings, advertisements, programming information, and other information may be displayed on television 68. Each set-top box 62, videocassette recorder 66, and television 68 can be controlled by one or more remote controls 70 or any
10 other suitable user input interface, such as a wireless keyboard, mouse, trackball, dedicated set of buttons, touch screen display remote, etc. Remote controls, such as remote control 70, have various buttons that can be pressed by the user such as arrow keys (e.g.,
15 for directing on-screen movement of a highlight region, for directing scrolling functions, etc.), an OK, select, enter, or other such selection key for making a selection (hereinafter referred to as an OK key), channel number keys (for selecting a television
20 channel), a favorites key (to invoke functions related to user preferences), a delete key (to delete menu items or to express a disinterest in certain user preferences), an information key for receiving information on a program (hereinafter referred to as an
25 INFO key), a specific feature key (e.g., a related-program search key to invoke program searching), etc. For illustrative purposes, many aspects of the present are discussed primarily in the context of a user interface being a remote control.

30 Certain program guide features, such as pay program purchasing, the purchasing of products or services, and data collection functions, may require that user television equipment 58 transmit data to television distribution facility 56 over communications

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paths 60. If desired, such data may be transmitted over telephone lines or other separate communications paths. If features such as these are provided using facilities separate from television distribution
5 facility 56, some of the communications involving user television equipment 58 may be made directly with the separate facility (not shown).

If desired, an interactive television program guide system may be implemented using a data-relay
10 architecture. In such an architecture, television distribution facility 56 may serve as a data relay site and user television equipment 58 may be a data destination site. For example, as television distribution facility 56 receives information from main
15 facility 52, television distribution facility 56 may continuously or periodically distribute information to user television equipment 58. In a data-relay architecture, a program guide implemented on user television equipment 58 may use a database (e.g.,
20 database 64) for storing program guide information at user television equipment. Program guide information may include program listings and program attributes. Program attributes may be information such as program title, program actors, program duration, program genre
25 (e.g., sports, comedy, movies, etc.), program channel, scheduled program duration, program rating (e.g., TV-G, PG-13, etc.), program content rating (or critics' rating or star rating, e.g., one star, two stars, etc.) and other related parameters that can be tagged to a
30 program. Television distribution facility 56 may also poll set-top boxes periodically for certain information (e.g., pay program account information or information regarding programs that have been purchased and viewed using locally-generated authorization techniques).

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The features of the present invention may be implemented in a client-server arrangement or in a combination client-server and data-relay arrangement. In such arrangements, the server (e.g., television
5 distribution facility 56) may include a database that may include program listing information.

For clarity, the present invention is sometimes described primarily in the context of program guides that are implemented on user television
10 equipment rather than in the context of program guides that are implemented partially on a server and partially on user television equipment or a more fully server-based architecture.

Each set-top box 62 preferably contains a
15 processor to handle tasks associated with implementing an application on the set-top box 62 that assists the user in searching for programs. For example, a stand-alone application may be provided that supports program searching, as described more fully below. If desired,
20 these tasks may be implemented using a program guide application. For clarity, the present invention will be described primarily in the context of such a program guide application and in the context of a program guide system.

25 Illustrative steps involved in providing program searching in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 2. Initially at step 80, the program guide may provide a user with an
30 opportunity to request that the system locate programs that are related to a particular program (e.g., a program in which the user has indicated an interest using the system). The program guide may, at step 82, display a list of programs that are related to the

- 13 -

particular program when the user requests that the system locate programs that are related to the particular program. The program guide may include programs in the list based on criteria, such as whether
5 a program is related in attribute to the particular program, whether a program is a sequel or prequel of the particular program, whether a program is in the same program series as the particular program, whether a program is a series that is related to the particular
10 program, whether a program is related the user-selected program in content or subject matter, whether a program has the same actor(s), director, category, theme, or production year as the user-selected program, etc.

Illustrative steps involved in providing a
15 user with an opportunity to request that a system locate programs related to a given program in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 3a. At step 84, the program guide may provide
20 a user with an opportunity to indicate an interest in a given program. The user may indicate an interest in the given program by, for example, positioning a highlight region on a program listing for the given program, tuning the system to the given program,
25 selecting that an information display screen for the given program be displayed, etc. At step 86, the program guide may provide the user with an opportunity to request that the system locate programs that are related to the given program.

30 Illustrative display screens of FIG. 3b, FIG. 3c, FIG. 3d, and FIG. 3e may be provided based on the illustrative steps of FIG. 3a. As shown in FIG. 3b, the program guide may display related program find display screen 94 for the program Seinfeld when a user

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presses a single user interface key while a video for Seinfeld is displayed in display screen 92. The single user interface key may, for example, be a search key of a remote control for requesting that the system locate
5 related programs.

If desired, as shown in FIG. 3c, the program guide may display related-program find display screen 90 for the program Seinfeld when the user presses a predetermined sequence of user interface keys after
10 navigating a highlight region on a listing for Seinfeld in program listings display screen 88. The predetermined sequence of user interface keys may, for example, be pressing a search key and an OK key of a remote control.

15 A sequence of keys may be used when the user interface device (e.g., a remote control) does not have a key dedicated to providing the user with an opportunity to request that the system locate related programs.

20 If desired, as shown in FIG. 3d, the program guide may display related-program find display screen 98 for the Knicks v. Wizards basketball game when the user presses a search key of a remote control after navigating a highlight region on the listing for the
25 Knicks v. Wizards basketball game in sports category program listings display screen 96.

If desired, as shown in FIG. 3e, the program guide may display related-program find display screen 102 for Dateline when a user presses a remote control
30 OK key after navigating a highlight region on related programs option 104 of information display screen 100 for Dateline. The program guide may have displayed information display screen 100 for Dateline when, for example, the user pressed an OK key of a remote control

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after navigating a highlight region on a Dateline program listing, the user pressed an INFO key when video for Dateline is being displayed, etc. Examples of program guide systems with information display screen capabilities are provided in Rudnick et al., U.S. Patent Application Serial No. 09/356,268 filed July 16, 1999, which is hereby incorporated by reference herein in its entirety.

Illustrative steps involved in displaying program listings that are related to a given program in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown in FIG. 4. At step 106, the program guide may provide the user with an opportunity to indicate an interest in a given program. At step 108, when the user indicates an interest in the given program, the program guide may provide the user with an opportunity to request that the system locate programs that are related to the given program.

At step 110, the program guide may locate program listings (e.g., program listings stored in a program guide database, such as database 64 of FIG. 1) that are related to the given program. The program guide may locate program listings based on attributes of the given program. For example, the program guide may locate program listings for programs that have an attribute that matches an attribute of the given program (e.g., a common actor, same content, same subject matter, same series, common director, same category, same theme, common production year, etc.), program listings for programs that have a plurality of attributes matching attributes of the given program, program listings for programs that have attributes that are related to the attributes of the given program

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(e.g., prequels, sequels, similar content, similar subject matter, related series, etc.), etc.

At step 112, the program guide may display a display screen (or, if desired, an overlay) having
5 listings for programs which are related to the user-selected program. From the list, the user may find a particular program of interest to the user. The program guide may provide the user with an opportunity to select a program listing from the list at step 114.

10 Illustrative program listings display screen 116, illustrative information display screen 118, and illustrative related-program find display screen 120 of FIG. 5 may be provided based on the illustrative steps of FIG. 4. The program guide may display information
15 display screen 118 for Star Trek: The Next Generation - Episode Y when a user selects a listing for Star Trek: The Next Generation - Episode Y in program listings display screen 116 (e.g., by pressing an INFO key when a highlight region is positioned on that listing).
20 Information display screen 118 may include a related programs options 122 for requesting to find programs related to Star Trek: The Next Generation - Episode Y.

The program guide may display related program find display screen 120 when a user selects the related
25 programs option 122 from information display screen 118. Related-program find display screen 120 includes a list of programs related to Star Trek: The Next Generation - Episode Y that contains: Episode K of Star Trek: The Next Generation, Episode D of Star Trek: Voyager, Star Trek: Wrath of Khan, Episode Z of Babylon
30 5, Episode X of Babylon 5, etc. The list may have been sorted based on attributes that were used by the program guide to locate the displayed program listings. For example, the list may have been sorted based on

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which attribute caused the match, or for example, based on how many attributes matched. Related-program find display screen 120 may include an indicator, such as arrow 124, to inform the user that the list may be
5 scrolled to display further listings for related programs that are not currently displayed. Such an indicator may be used when there is insufficient space for displaying all the related programs in a related program find display screen.

10 Illustrative steps involved in displaying program listings that are related to a given program based on user-configured search parameters in an interactive television system such as interactive television program guide system 50 of FIG. 1 are shown
15 in FIG. 6. Steps 126 and 128 are the same as steps 106 and 108 of FIG. 4, respectively, and are discussed above. At step 130 of FIG. 6, when the user requests that the system locate programs that are related to a given program, the program guide may provide the user
20 with an opportunity to configure search parameters for searching for related programs based on attributes of the user-selected program. At step 132, the program guide may then locate program listings based on the user-configured search parameters. The program guide
25 may locate program listings from program listings stored in a database, such as program listings database 64 FIG. 1. The location of the program listings database may depend on the communications arrangement of the interactive television program guide system
30 (e.g., in a client-server arrangement at least part of the database may be located at a television distribution facility). At step 134, the program guide may display a display screen including on-screen listings for programs that are related to the given

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program based on the user-configured search parameters. At step 134a, the program guide may sort the located listings for display based on the user-configured search parameters. At step 134b, the program guide may
5 provide the user with an opportunity to select one of the displayed programs listings.

Illustrative display screen 136 and illustrative related-program find search configuration display screen 138 (hereinafter, configuration display
10 screen 138) of FIG. 7a may be provided based on the illustrative steps of FIG. 6. The program guide may display configuration display screen 138 for an episode of Star Trek: The Next Generation when a user presses a single key of a remote control while a video for that
15 episode of Star Trek: The Next Generation is being displayed. Configuration display screen 138 may contain an on-screen list of attributes for the given program, Star Trek: The Next Generation. The configuration display screen 138 may contain options
20 for providing the user with an opportunity to assign various importance levels to the on-screen program attributes. The option may provide the user with an opportunity to assign different importance levels such as required, desired, ignored, or excluded to the
25 program attributes.

Configuration display screen 138 shows that importance levels may be assigned to the program attributes for the given episode of Star Trek: The Next Generation so that when locating related program
30 listings, the program guide excludes programs that are Star Trek: The Next Generation, ignores whether a program is a Star Trek program when deciding whether it matches, ignores whether a program is a Star Trek movie when deciding whether it matches, requires matching

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programs to be science fiction, requires matching programs to have Patrick Stewart. Configuration display screen 138 may include a search option that may provide the user with an opportunity to direct the
5 program guide system to locate program listings related to the given program based on the program attributes and their assigned importance levels.

Illustrative related-program find display screens 140 and 142 of FIG. 7b may be provided based on
10 the illustrative steps of FIG. 6. The program guide may display related-program find display screen 140 when, for example, the user selects the search option from configuration display screen 138 of FIG. 7a. Display screen 140 may include a list of programs that
15 are related to the given program based on the search parameters of configuration display screen 138 of FIG. 7a. The list of related programs in display screen 140 includes the program Lifeforce, which is a science fiction program (a required attribute) starring Patrick
20 Stewart (a required attribute), and includes three Star Trek movies (Insurrection, First Contact, and Generations) that are also science fiction programs starring Patrick Stewart and also starring Jonathan Frakes (a desired attribute). Lifeforce may be
25 displayed at the bottom of the list because the other programs more closely match the user-configured search parameters.

Display screen 140 may include option 144 for displaying more program listings that are related to
30 Star-Trek: The Next Generation based on the user-configured search parameters. Display screen 140 may include save configuration option 146 that provides the user with an opportunity to save the user-configured search parameters. The program guide may display

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related-program find display screen 142 when the user selects save configuration option 146 of display screen 140. Display screen 142 is the same display screen as display screen 140 except that display screen 142 includes unsave configuration option 148 that provides the user with an opportunity to unsave the user-configured search parameters (e.g., delete the saved user-configured search parameters).

If desired, an arrangement such as that shown in FIG. 7c may be used to search for related programs. Initially, the user may indicate an interest in a given program by selecting a program listing for the given program from an on-screen display of program listings, by pressing an OK button or other remote control button while tuned to the given program (e.g., while tuned to the given program with a set-top box or the like), by selecting the program from the results of a search, etc.

A list of attributes for the given program (such as the attribute list of display screen 300 of FIG. 7c) may be displayed for the user (e.g., by the program guide or other interactive application running on the system). A moveable highlight region such as highlight region 302 or other such indicator may be used to provide the user with an opportunity to select attributes of interest to be used in searching for related programs.

As shown in display screen 304 of FIG. 7c, the user may select one or more attributes (e.g., by pressing a remote control OK button or otherwise selecting desired attributes). The system may display a visual indication of which program attributes have been scheduled. For example, the system may highlight selected attributes, may change their color, text font,

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brightness, etc. or may display an indicator such as indicators 306 to indicate which program attributes have been selected by the user. When the user highlights search option 308 and presses a remote control OK button (or otherwise selects option 308), the system searches for program listings matching the selected program attributes. When plural attributes are selected, the search may be performed using a logical AND or a logical OR function. The search results may be displayed using any suitable on-screen arrangement and may be selectable (for more information, automatic tuning, etc.) if desired.

The arrangement of FIG. 7c is merely illustrative. Any suitable arrangement may be used for providing an on-screen display of program attributes related to a selected program. The attributes may include program genre(s), actors, rating, channel, director, year produced, or any other suitable program attributes. The program attribute information may be provided with the program listings data. In a client-server arrangement, for example, the program attributes may be maintained with program listings data stored on a server located at a cable system headend (or at another suitable location). In configurations in which program listings are stored locally on a set-top box or other user equipment, program attributes may be maintained locally.

Illustrative information display screen 150 and illustrative related-program find search configuration display screen 152 (hereinafter, configuration display screen 152) of FIG. 8a may be provided based on the illustrative steps of FIG. 6. The program guide may display information display screen 150 when a user selects to receive information

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on the Denver Broncos v. Dallas Cowboys football game. Information display screen 150 may include related programs option 154 that provides the user with an opportunity to request that the system locate programs that are related to the Denver Broncos v. Dallas Cowboys football game. The program guide may display configuration display screen 152 when the user selects the related programs options from information display screen 150. Configuration display screen 152 may include an on-screen list of program attributes that are to be configured by the user.

The on-screen program attributes may differ based on the specifics of the given program and based on the category for the given program. For example, for a sports category program, the on-screen list may include attributes that are specific to that sports program and/or include attributes that are related to sports programs in general. As shown, configuration display screen 152 may include the following attributes: other football games, NFL games, Broncos games, Cowboys games, any sporting events, football-related programs, programs with John Elway as guest, etc. The user may then configure the search parameters to require matching programs to be football games, desire NFL games and Broncos games, exclude Cowboys games, ignore whether a program is a sporting event when deciding whether it matches, ignore whether a program is a football related program when deciding whether it matches, and ignore whether a program has John Elway as guest when deciding whether it matches.

Illustrative related program find display screen 158 of FIG. 8b may be provided based on the illustrative steps of FIG. 6. Display screen 158 may be displayed when a user selects search option 156 from

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configuration display screen 152 of FIG. 8a. Display screen 158 of FIG. 8b may include listings that are sorted for display based on the user-configured search parameters of configuration display screen 158. The
5 program guide may display program display screen 160 that contains video of a current program when the user selects a listing for a current program from the program listings contained in related-program find display screen 158. If desired, the program guide may
10 display information display screen 162 for a program when the user selects a program listing from the program listings contained in related-program find display screen 158.

If desired, the listings in related-program
15 find display screen 158 may include program title, air time, channel, rating, pay-per-view information, etc.

Illustrative steps for an interactive television system such as interactive television program guide system 50 of FIG. 1 involved in providing
20 the illustrative display screens of FIG. 8b are shown in FIG. 9. At step 164, the program guide may display a display screen having on-screen program listings that are related to a given program. Step 164 may include step 166 in which the program may provide the user with
25 an opportunity to select one of the on-screen program listings. At step 168, the program guide may tune to a channel for a current program when the user selects one of the on-screen listings that is for a current program. At step 170, the program guide may display an
30 information display screen for a selected on-screen listing when the user selects that on-screen listing. At step 172, the program guide may return the user to viewing television or to an earlier display screen when the user exits from the display screen having the

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related on-screen program listings (e.g., presses an exit or back key of a remote control).

Illustrative steps for an interactive television system such as interactive television program guide system 50 of FIG. 1 involved in displaying a list of saved searches are shown in FIG. 10a. At step 174, the program guide may provide the user with an opportunity to select a saved search option. At step 176, the program guide may display a display screen having a list of saved searches when a user selects the saved search option.

Illustrative main menu display screen 178 and illustrative saved searches display screen 180 of FIG. 10b may be provided based on the illustrative steps of FIG. 10a. The program guide may display main menu display screen 178 to provide a main selection menu for accessing program guide features. Main menu display screen 178 may include saved searches option 182. The program guide may display saved searches display screen 180 when the user selects saved searches option 182. Saved searches display screen 180 may include a list of saved-searches that are identified on the screen using the given program title for each saved search. When two saved searches are for two programs with the same title, the program guide may use numbering to distinguish the listings. If desired, the user may have been allowed to name the saved searches. For example, the program guide may have provided the user with an opportunity to enter a name (e.g., by selecting or entering alphanumeric letters with a user interface device) for a search that a user is directing the program guide to save. The saved searches may be selected by the user to provide the user with an opportunity to search current program listings using

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search parameters that were user-configured in an earlier search of program listings.

Illustrative steps for an interactive television system such as interactive television program guide system 50 of FIG. 1 involved in displaying a list of saved searches are shown in FIG. 11. At step 184, the program guide may display a display screen having a list of saved searches. At step 186, the program guide may provide a user with an opportunity to select a saved search. At step 188, the program guide may display a list of programs based on a search of currently available program listings with saved search parameters from an earlier search.

At step 190, the program guide may provide the user with an opportunity to delete a saved search from the list of saved searches. At step 192, the program guide may delete a particular saved search when the user selects to delete that particular saved search.

At step 194, the program guide may provide the user with an opportunity to select an option to view user-configured search parameters for a saved search. At step 196, the program guide may display a display screen having user-configured search parameters for a saved search when the user selects to view user-configured search parameters for that saved search. If desired, step 196 may include a step that provides the user with the opportunity to modify the save searches.

At step 198, the program guide may provide the user with an opportunity to set (or remove) an automatic notification for programs that have been located using a saved search. At step 200, the program guide may display a notice that a located program is scheduled to air when the user has selected to receive

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automatic notifications. If desired, step 200 may include a step that provides the user with the opportunity to act on it.

Illustrative saved searches display screen 202 and illustrative related-program find display screen 204 of FIG. 12 may be provided based on the illustrative steps of FIG. 11. Saved searches display screen 202 may include a list of saved searches and corresponding options, including a search option, for each saved search. The program guide may display related program find display screen 204 when the users selects the search option for Search #4. Related program find display screen 204 may include a list of current program listings based on the user-configured search parameters for Search #4.

Illustrative saved searches display screens 206 and 208 of FIG. 13 may be provided based on the illustrative steps of FIG. 11. The program guide may display saved searches display screen 206 that includes a delete option for Search #3. The program guide may display saved searches display screen 208 that does not include Search #3 when the user selects the delete option for Search #3.

Illustrative display screen 214 and illustrative saved searches display screens 210 and 212 of FIG. 14 may be provided based on the illustrative steps of FIG. 11. The program guide may display saved searches display screen 210 that includes an automatic notification option for saved searches including Search #5. The automatic notification option for search #5 may initially be off. The program guide may display saved searches display screen 212 that includes an indication that the automatic notification for Search #5 is on when the user selects the automatic

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notification option for Search #5 from display screen 210. After the user exits saved searches display screen 212 and resumes watching television, the program guide may display automatic notification overlay 216 in display screen 214 when the program guide locates a program (e.g., the movie Terminator) using the user-configured search parameters for Search #5. If desired, the program guide may provide a notification display screen for the located program. The notification may be displayed when the program is about to air or is airing. The overlay 216 may include a tune option (for tuning to the channel airing that program), an information option (for display further information on that program), a saved searches option (for displaying a saved searches display screen), an order option (for ordering programs), etc.

Illustrative saved searches display screen 218 and illustrative saved search configuration display screen 220 of FIG. 15 may be provided based on the illustrative steps of FIG. 11. The program guide may display saved searches display screen 220 having an option that provides the user with an opportunity to view search parameters for saved searches. The program guide may display saved search configuration display screen 222 for Search #3 when the user selects the option to view search parameters for Search #3. Saved search configuration display screen 222 may display the saved user-configured search parameters for Search #3, a modify configuration option (to allow the user to adjust the search parameters), and a search option (to search the current program listings based on the user-configured search parameters). If desired, the program guide may provide the user with an opportunity to modify the settings on this screen by highlighting and

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changing them, rather than having to first select a
"modify" option.

Illustrative saved searches display screen
224 and illustrative saved search configuration display
5 screen 226 of FIG. 16 may be provided based on the
illustrative steps of FIG. 11. The program guide may
display saved searches display screen 224 that includes
a list of saved searches when a user selects a saved
searches option (e.g., saved searches option 182 of
10 FIG. 10b). The program guide may display saved search
configuration display screen 226 when the user selects
a saved search from saved searches display screen 224.
Saved search configuration display screen 226 may
include on-screen search settings for the selected
15 saved search. The program guide may provide the user
with an opportunity to navigate to any of the settings
and to modify them. Saved search configuration,
display screen 226 may include search option 228 that
when selected, causes the program guide to display a
20 list of matching programs, rename option 230 that
allows the user to enter a name (or modify the name)
for the selected saved search, delete option 232 that
when selected, deletes the selected save search,
automatic notification option 234 that provides an
25 automatic notification of programs matching the
selected saved search, etc. Automatic Notification
option 234 may include an indicator 236 to indicate
that option 234 is on.

The foregoing is merely illustrative of the
30 principles of this invention and various modifications
can be made by those skilled in the art without
departing from the scope and spirit of the invention.

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What is Claimed is:

1. A method for searching for television program listings, comprising:
 - providing a user with an opportunity to indicate an interest in a given program;
 - displaying an on-screen list of attributes related to the program;
 - providing the user with an opportunity to select one of the attributes; and
 - displaying a list of program listings related to the selected attribute.
2. The method defined in claim 1, wherein providing the user with the opportunity to indicate an interest in the given program comprises providing the user with an opportunity to select a program listing for the given program from an on-screen display of program listings.
3. The method defined in claim 1, wherein providing the user with the opportunity to indicate an interest in the given program comprises providing the user with an opportunity to indicate an interest in a program that is currently being displayed.
4. The method defined in claim 1, further comprising:
 - providing the user with an opportunity to select a plurality of attributes; and
 - displaying in the list program listings that are related to the selected attributes.

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5. The method defined in claim 1, further comprising providing the user with an opportunity to select program listings from the list.

6. An interactive television program guide system for searching for television program listings, comprising:

user television equipment on which an interactive television program guide is at least partially implemented, wherein the user television equipment is configured to provide a user with an opportunity to indicate an interest in a given program, to display an on-screen list of attributes related to the program, to provide the user with an opportunity to select one of the attributes, and to display a list of program listings related to the selected attribute.

7. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with the opportunity to indicate an interest in the given program by being configured to provide the user with an opportunity to select a program listing for the given program from an on-screen display of program listings.

8. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with the opportunity to indicate an interest in the given program by being configured to provide the user with an opportunity to indicate an interest in a program that is currently being displayed.

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9. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with an opportunity to select a plurality of attributes, and to display in the list program listings that are related to the selected attributes.

10. The system defined in claim 6, wherein the user television equipment is further configured to provide the user with an opportunity to select program listings from the list.

11. A method for use in an interactive television program guide system having user television equipment and a remote control for interfacing with said user television equipment, said method being for searching for programs, comprising:

displaying a display screen that includes a video for a given program;

allowing the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to locate program listings related to the given program; and

displaying a display screen including the program listings located by the system.

12. The method defined in claim 11, further comprising sorting the program listings located by the system for display.

13. The method defined in claim 11, further comprising providing the user with an opportunity to select any of the displayed program listings.

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14. The method defined in claim 13, further comprising tuning to a particular program when the user selects a listing for the particular program from the displayed listings.

15. The method defined in claim 13, further comprising tuning to a current program when the user selects a particular one of the displayed listings that lists a current program.

16. The method defined in claim 13, further comprising displaying an information display screen that contains information related to a particular one of the displayed listing when the user selects that particular listing.

17. The method defined in claim 11, further comprising locating programs based on attributes of the given program.

18. An interactive television program guide system for searching for programs, comprising:

a remote control that is configured to interface with user television equipment;

user television equipment on which an interactive television program guide is at least partially implemented, wherein the user television equipment is configured to display a display screen that includes a video for a given program, to allow the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to locate program listings related to the given program, and to display a

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display screen that includes the program listings located by the system.

19. The system defined in claim 18, wherein the user television equipment is further configured to sort the program listings located by the system for display.

20. The system defined in claim 18, wherein the user television equipment is further configured to provide the user with an opportunity to select any of the displayed program listings.

21. The system defined in claim 20, wherein the user television equipment is further configured to tune to a particular program when the user selects a listing for the particular program from the displayed listings.

22. The system defined in claim 20, wherein the user television equipment is further configured to tune to a current program when the user selects a particular one of the displayed listings that lists a current program.

23. The system defined in claim 20, wherein the user television equipment is further configured to display an information display screen that contains information related to a particular one of the displayed listing when the user selects that particular listing.

24. The system defined in claim 18, wherein the user television equipment is further configured to

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locate programs based on attributes of the given program.

25. A method for use in an interactive television program guide system having user television equipment and a remote control for interfacing with said user television equipment, said method being for searching for programs, comprising:

- displaying a display screen that includes a video for a given program;

- allowing the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to display a display screen containing a plurality of program attributes for the given program;

- providing the user with an opportunity to assign various importance levels to the program attributes on the display screen; and

- displaying a selectable search option on the same display screen as the program attributes and assigned importance levels that the user selects to direct the program guide system to locate program listings related to the given program based on the program attributes and their assigned importance levels.

26. The method defined in claim 25, further comprising providing the user with an opportunity to have the program guide system save the plurality of program attributes for the given program.

27. The method defined in claim 26, further comprising providing the user with an opportunity to have the program guide system save the plurality of

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program attributes for the given program and their assigned importance levels.

28. The method defined in claim 26, further comprising providing the user with an opportunity to delete the saved plurality of program attributes for the given program.

29. The method defined in claim 25, further comprising displaying a list of program listings that the program guide system located based on the attributes and their assigned importance levels.

30. The method defined in claim 29 further comprising providing the user with an opportunity to select program listings from the list.

31. The method defined in claim 30, further comprising displaying information related to a particular program listing that has been selected from the list.

32. The method defined in claim 30, further comprising tuning to a particular program when a listing for the particular program is selected from the list.

33. An interactive television program guide system, comprising:

a remote control that is configured to interface with user television equipment; and

user television equipment on which an interactive television program guide is at least partially implemented, wherein the user television

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equipment is configured to display a display screen that includes a video for a given program, to allow the user to use a single key on the remote control while the video for the given program is being displayed to direct the program guide system to display a display screen containing a plurality of program attributes for the given program, to provide the user with an opportunity to assign various importance levels to the program attributes on the display screen, and to display a selectable search option on the same display screen as the program attributes and assigned importance levels that the user selects to direct the program guide system to locate program listings related to the given program based on the program attributes and their assigned importance levels.

34. The system defined in claim 33, wherein the user television equipment is further configured to provide the user with an opportunity to have the program guide system save the plurality of program attributes for the given program.

35. The system defined in claim 34, wherein the user television equipment is further configured to provide the user with an opportunity to have the program guide system save the plurality of program attributes for the given program and their assigned importance levels.

36. The system defined in claim 34, wherein the user television equipment is further configured to provide the user with an opportunity to delete the saved plurality of program attributes for the given program.

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37. The system defined in claim 33, wherein the user television equipment is further configured to display a list of program listings that the program guide system located based on the attributes and their assigned importance levels.

38. The system defined in claim 37, wherein the user television equipment is further configured to provide the user with an opportunity to select program listings from the list.

39. The system defined in claim 38, wherein the user television equipment is further configured to display information related to a particular program listing that has been selected from the list.

40. The system defined in claim 38, wherein the user television equipment is further configured to tune to a particular program when a listing for the particular program is selected from the list.

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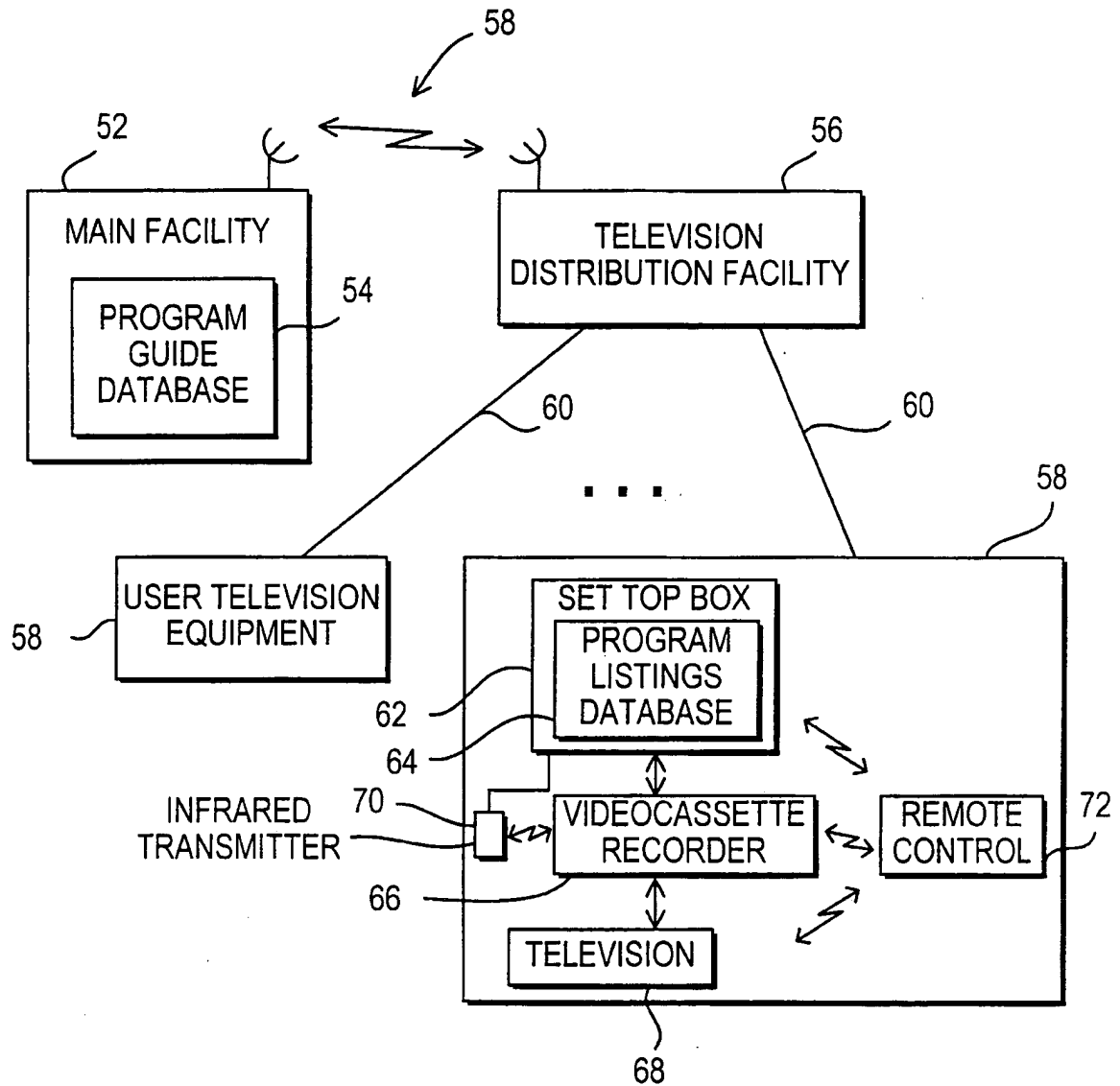
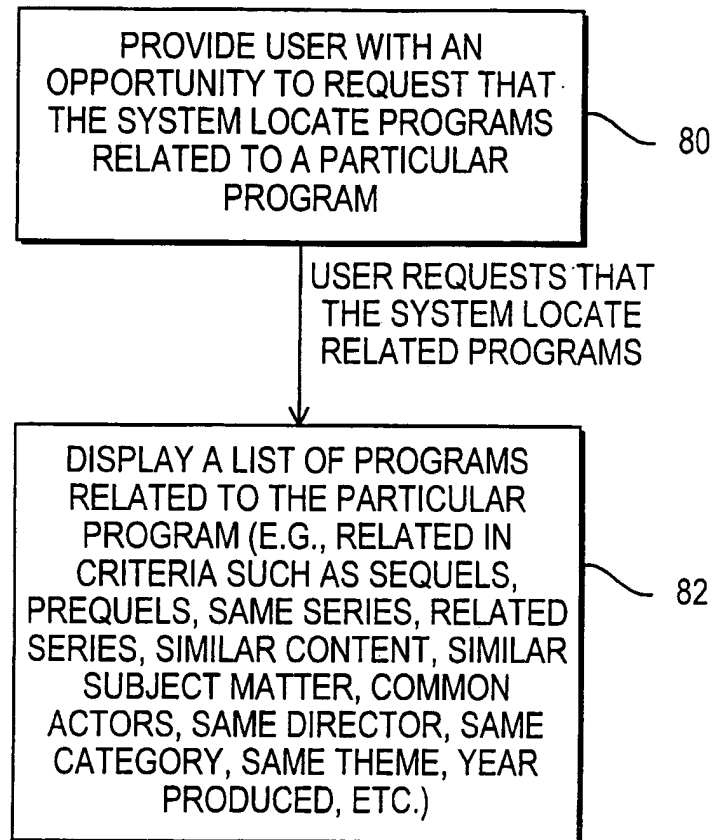


FIG. 1

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**FIG. 2**

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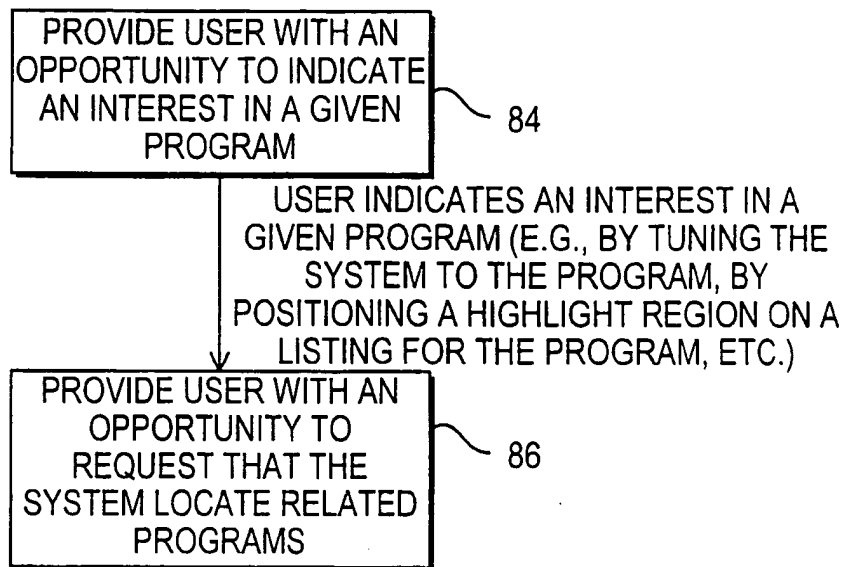


FIG. 3A

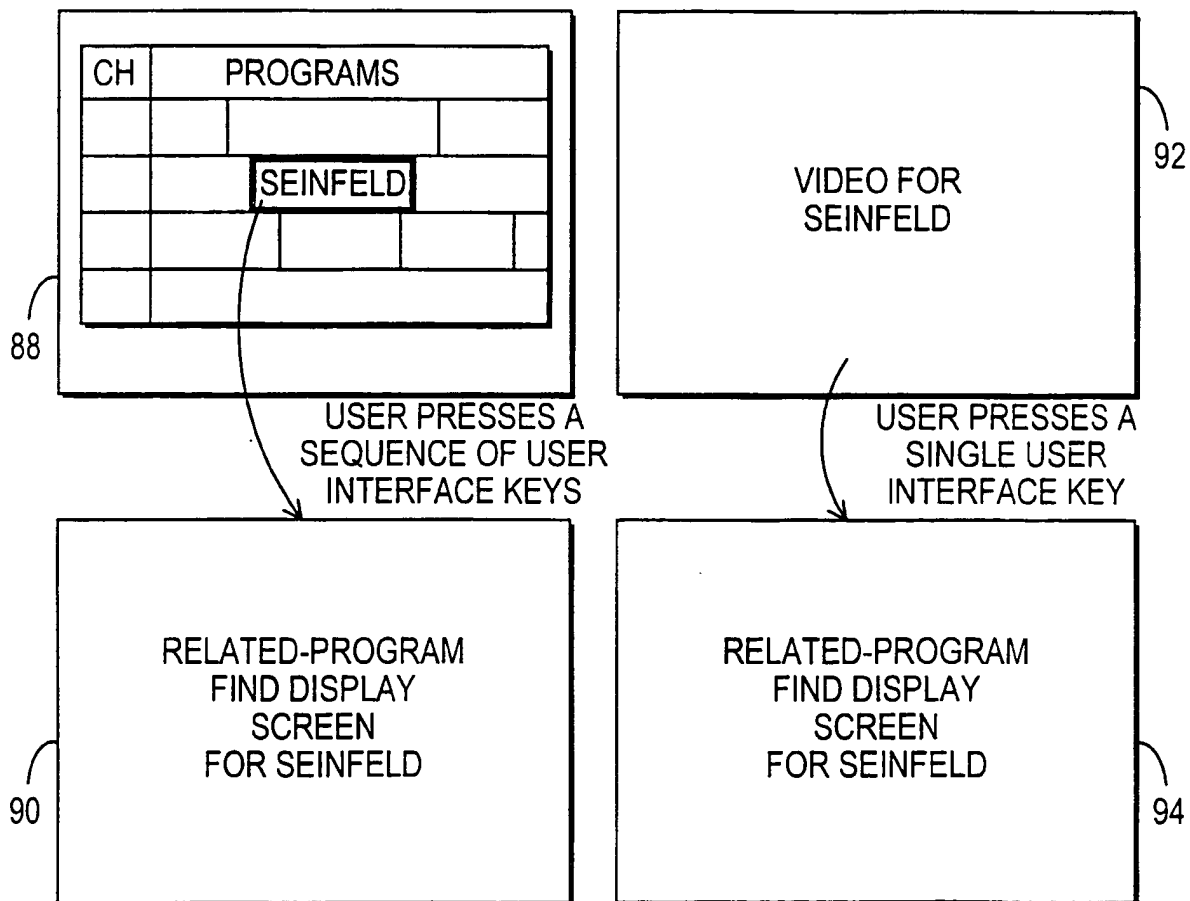


FIG. 3C

FIG. 3B

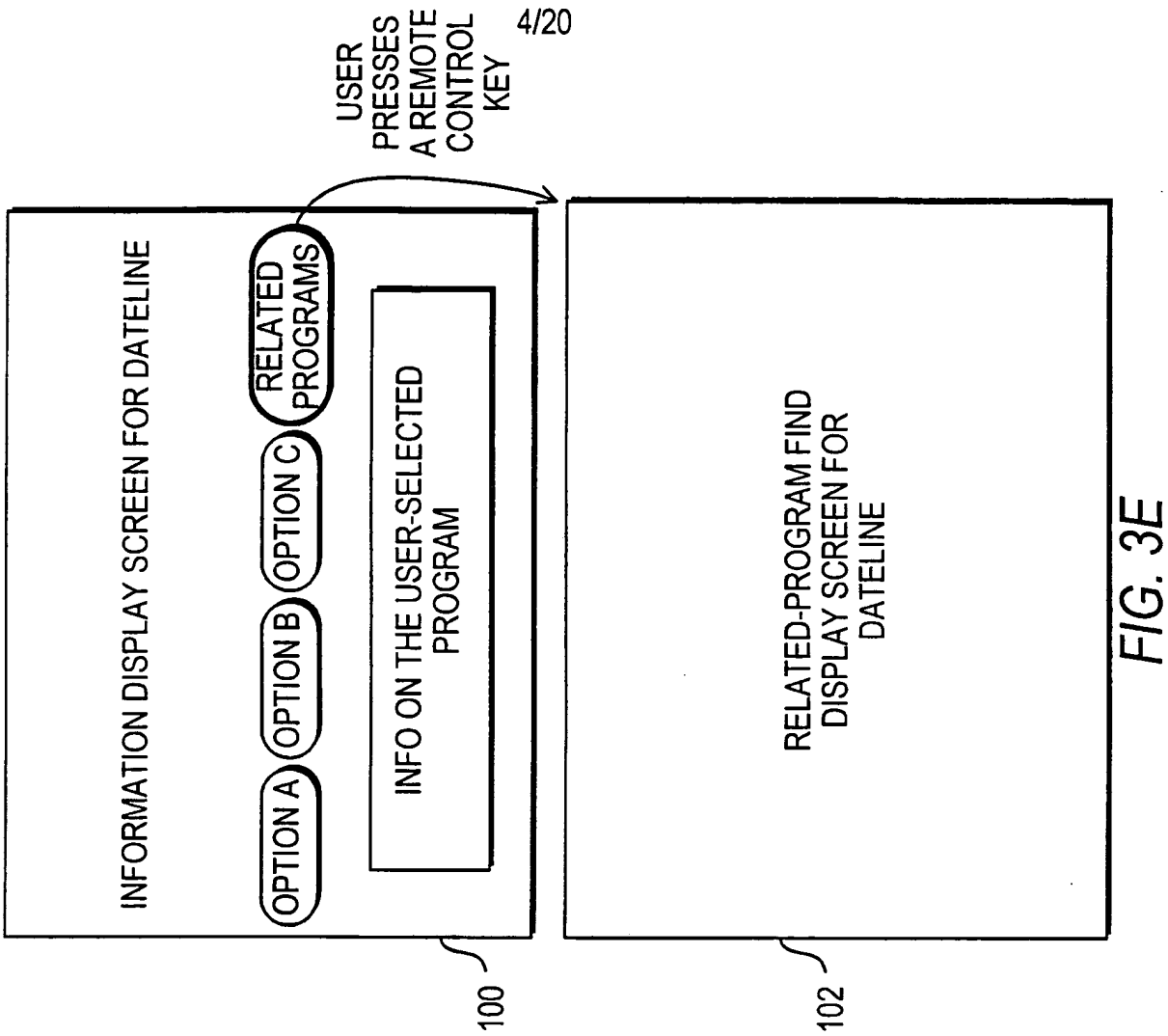


FIG. 3E

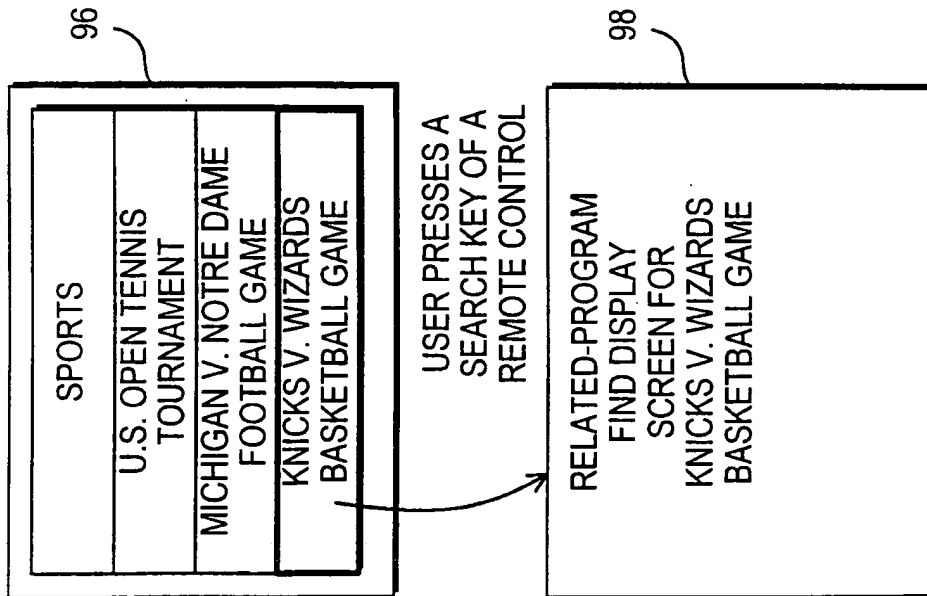


FIG. 3D

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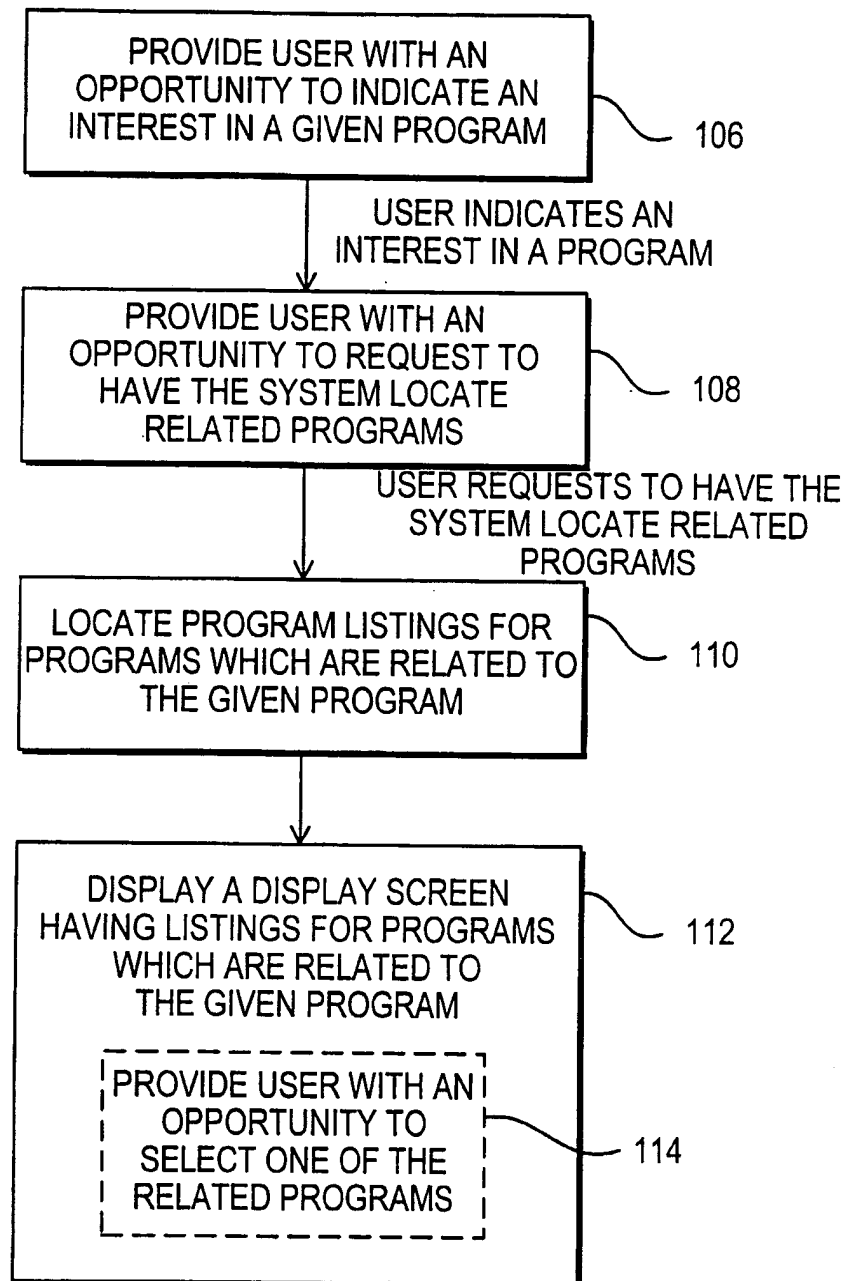


FIG. 4

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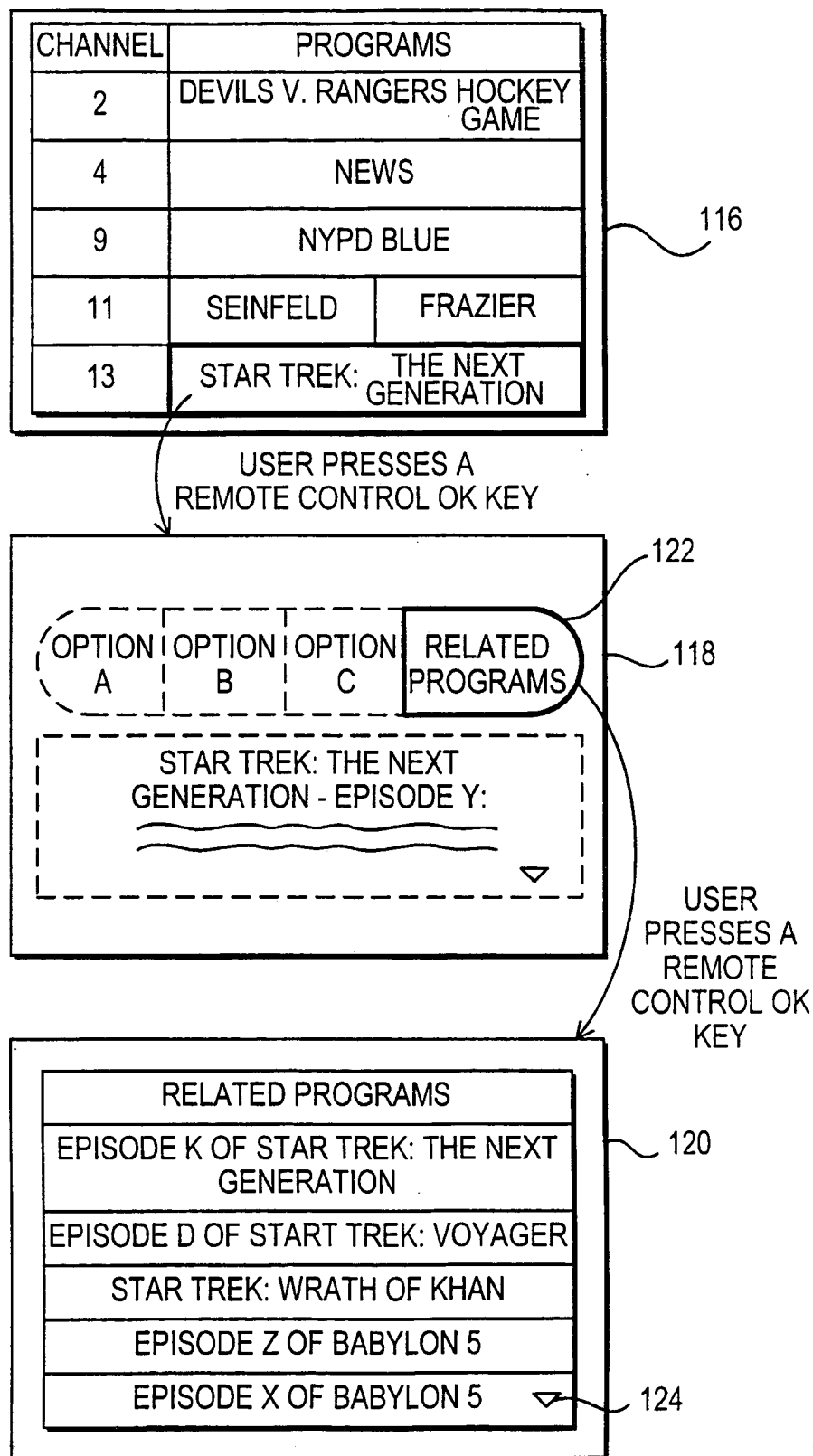


FIG. 5

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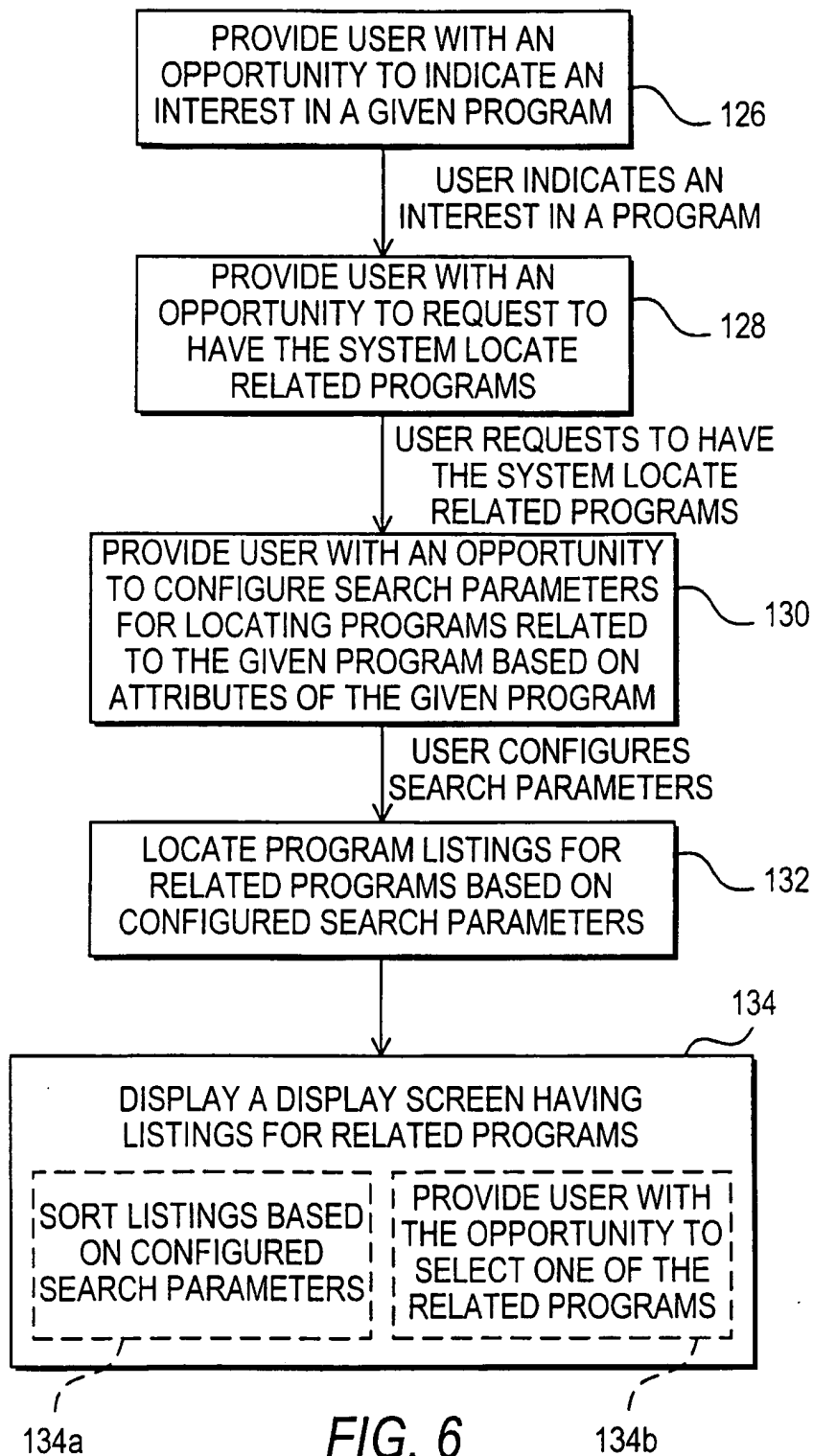
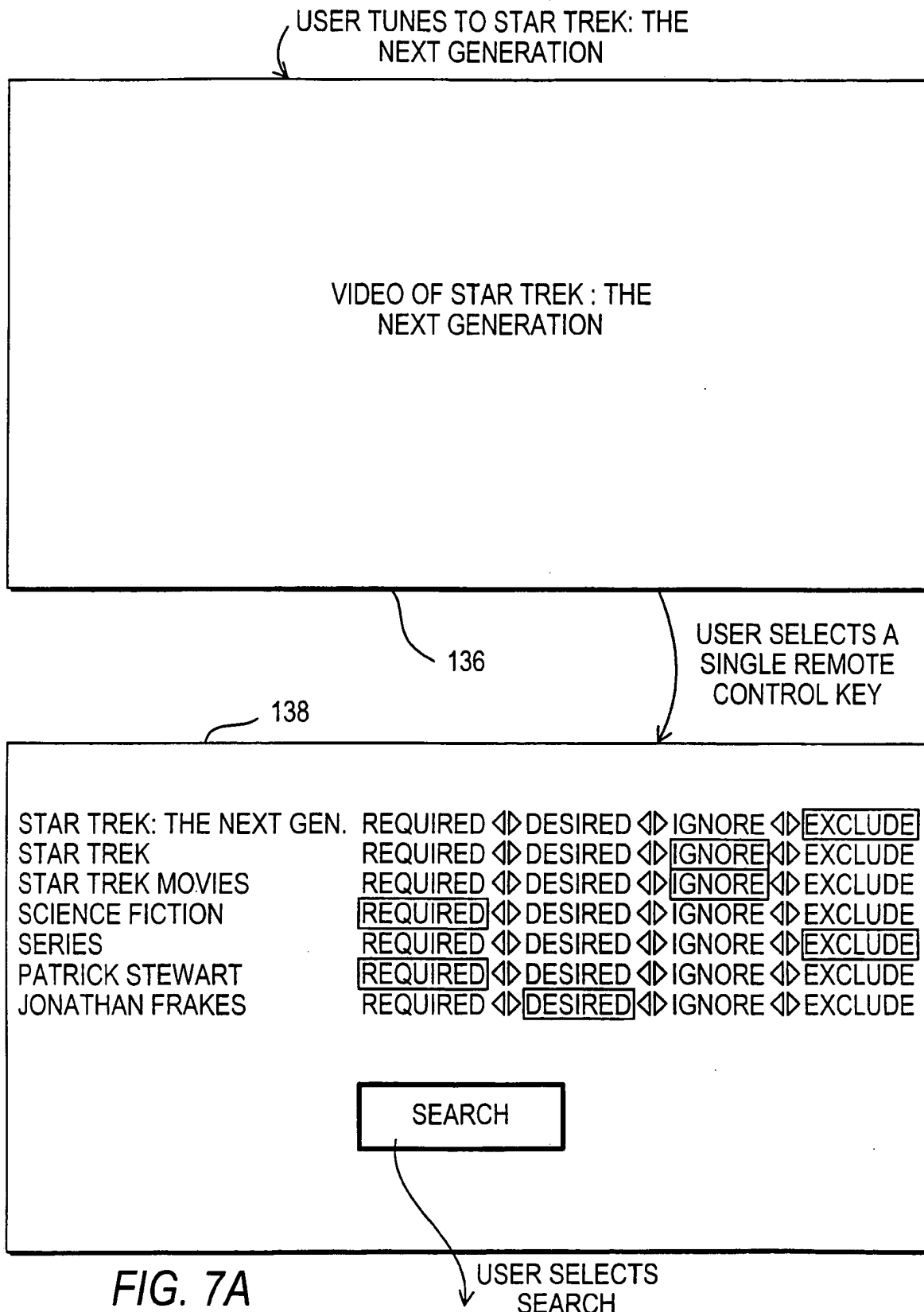
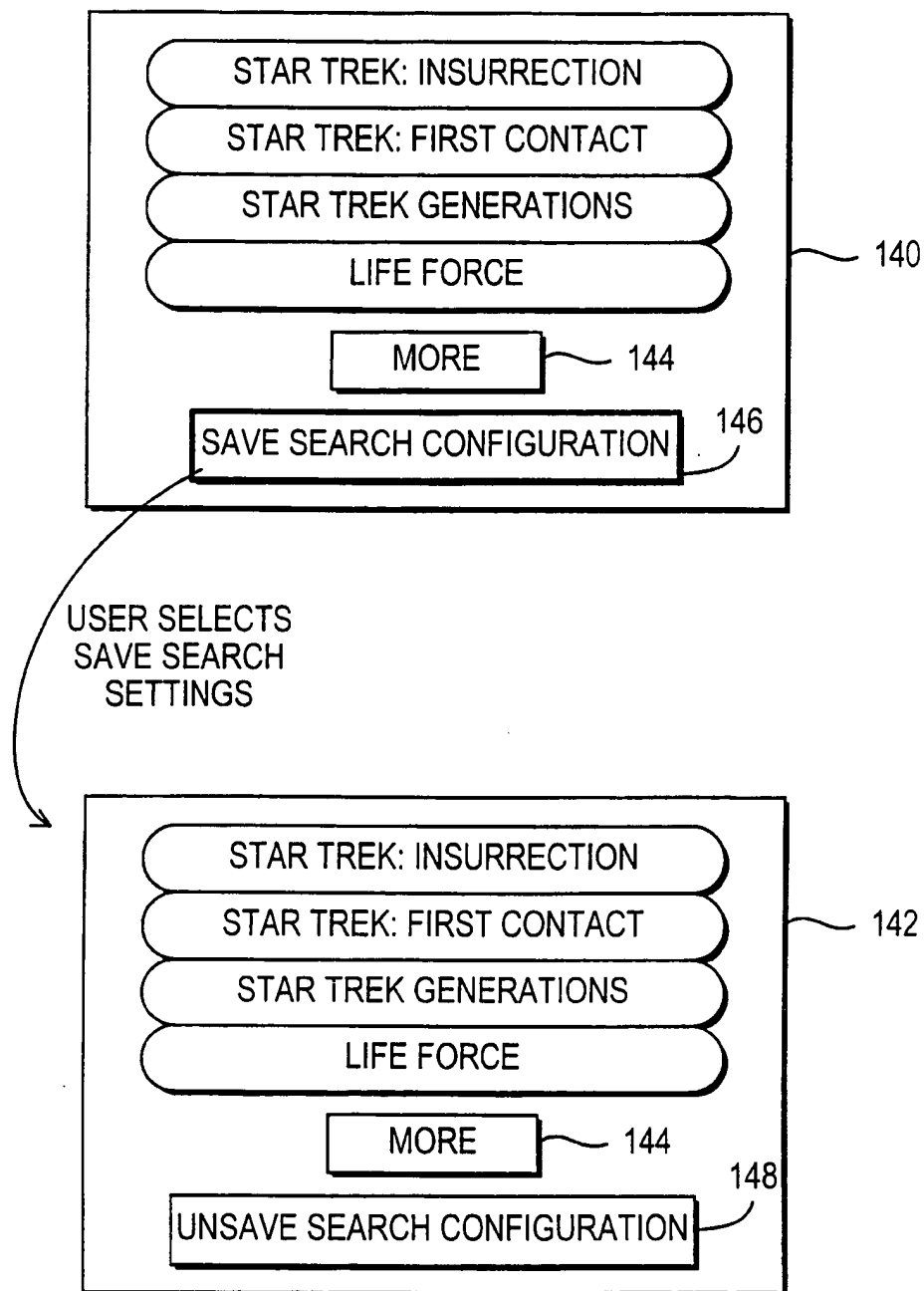


FIG. 6

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*FIG. 7B*

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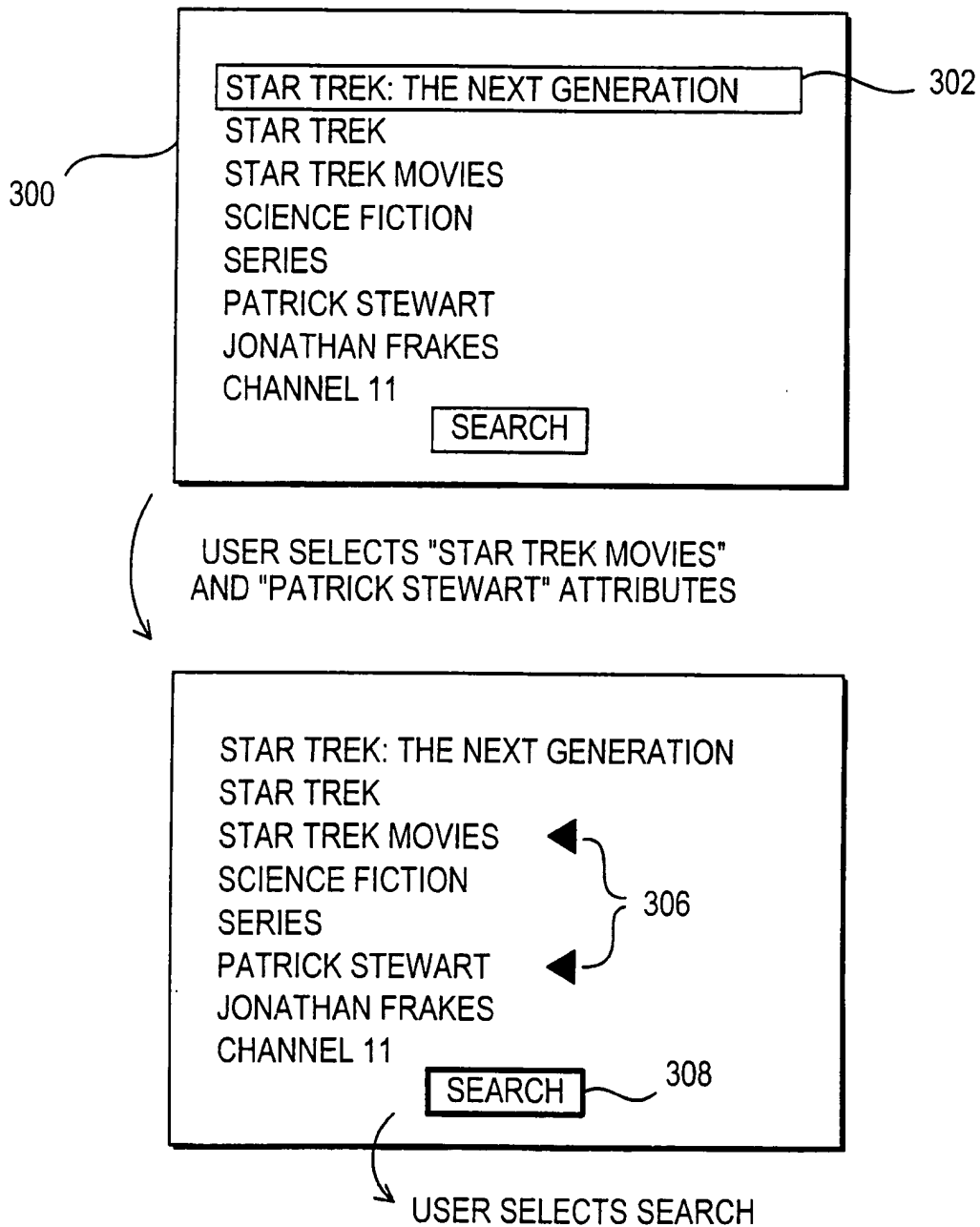
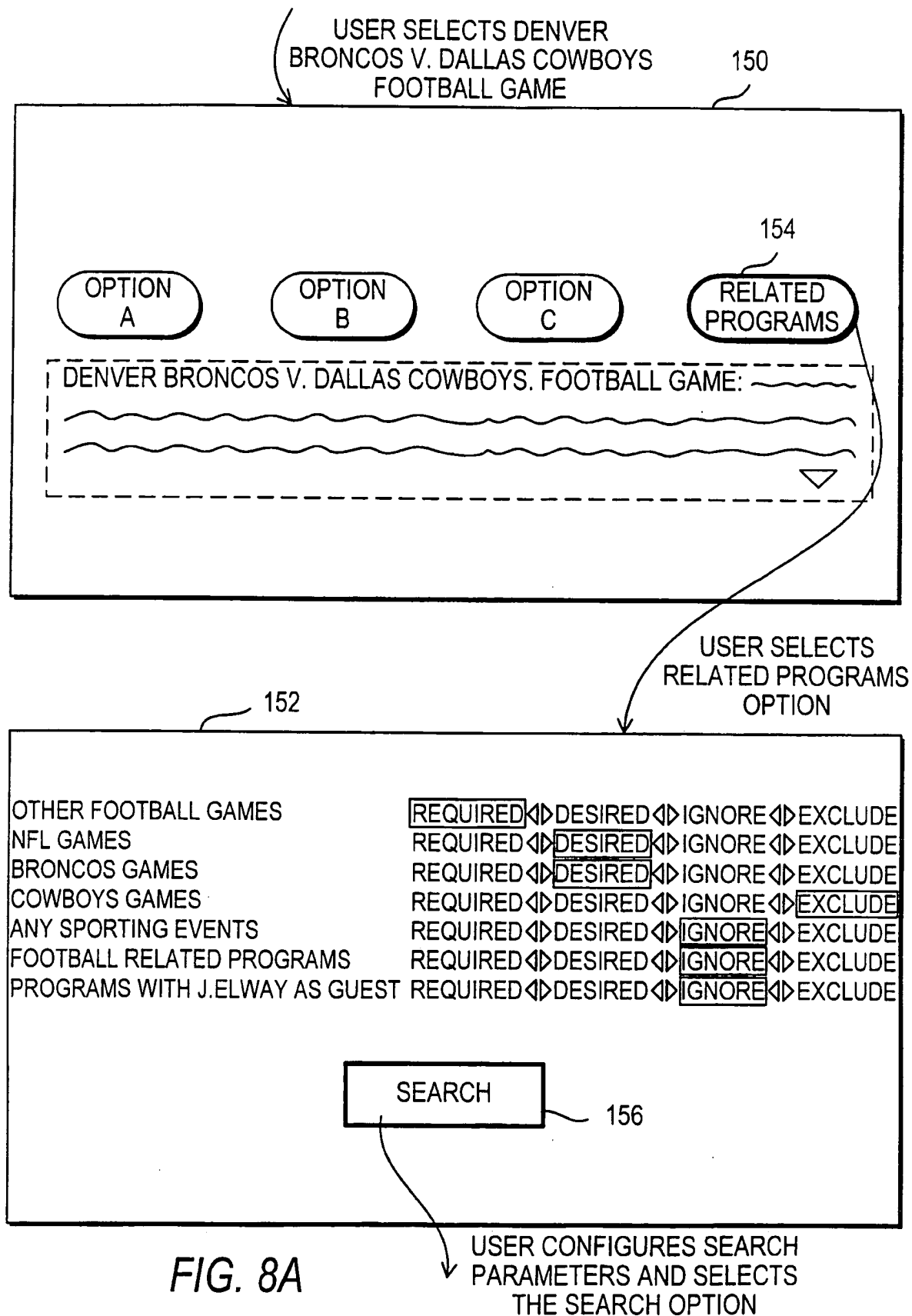


FIG. 7C

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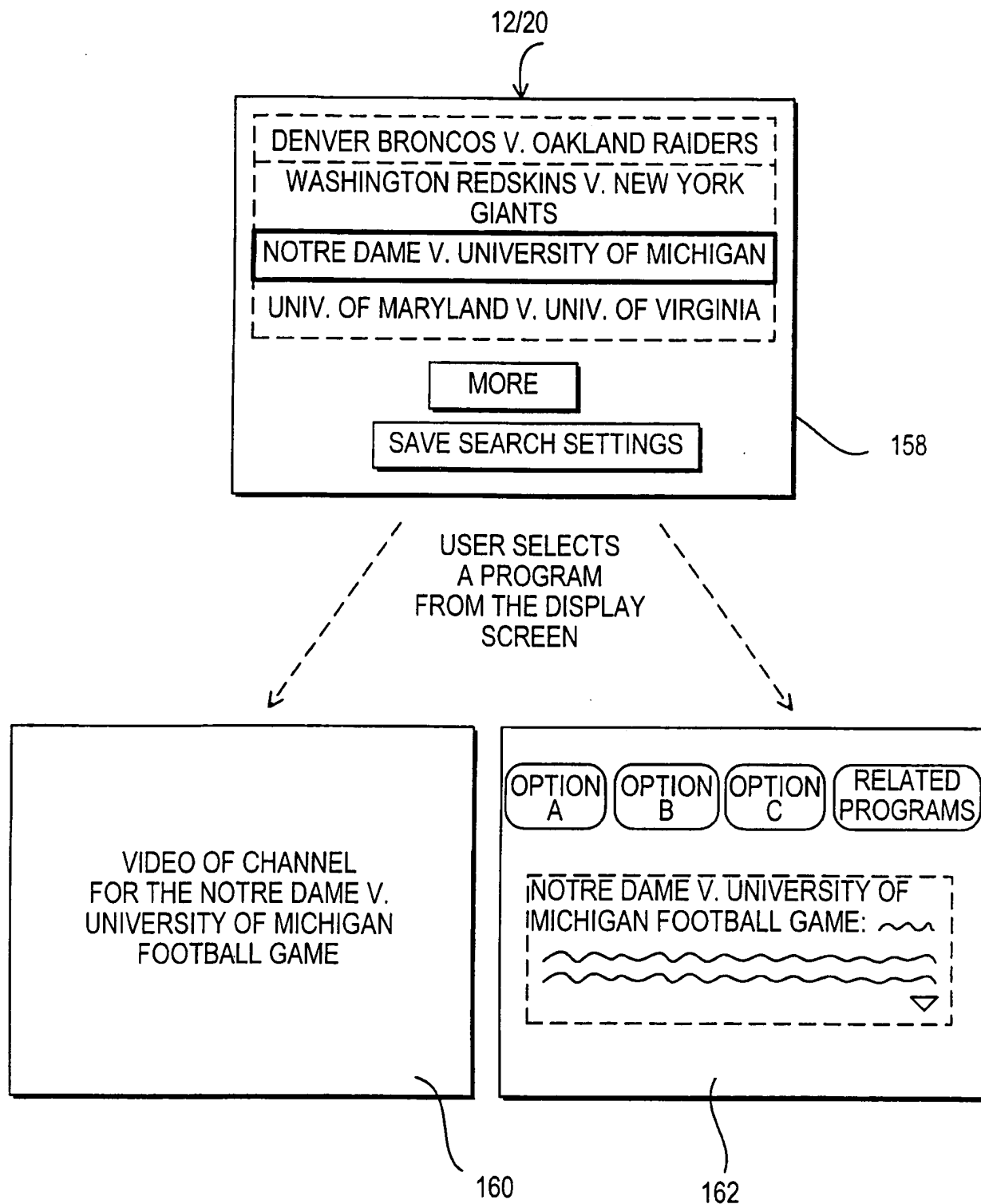


FIG. 8B

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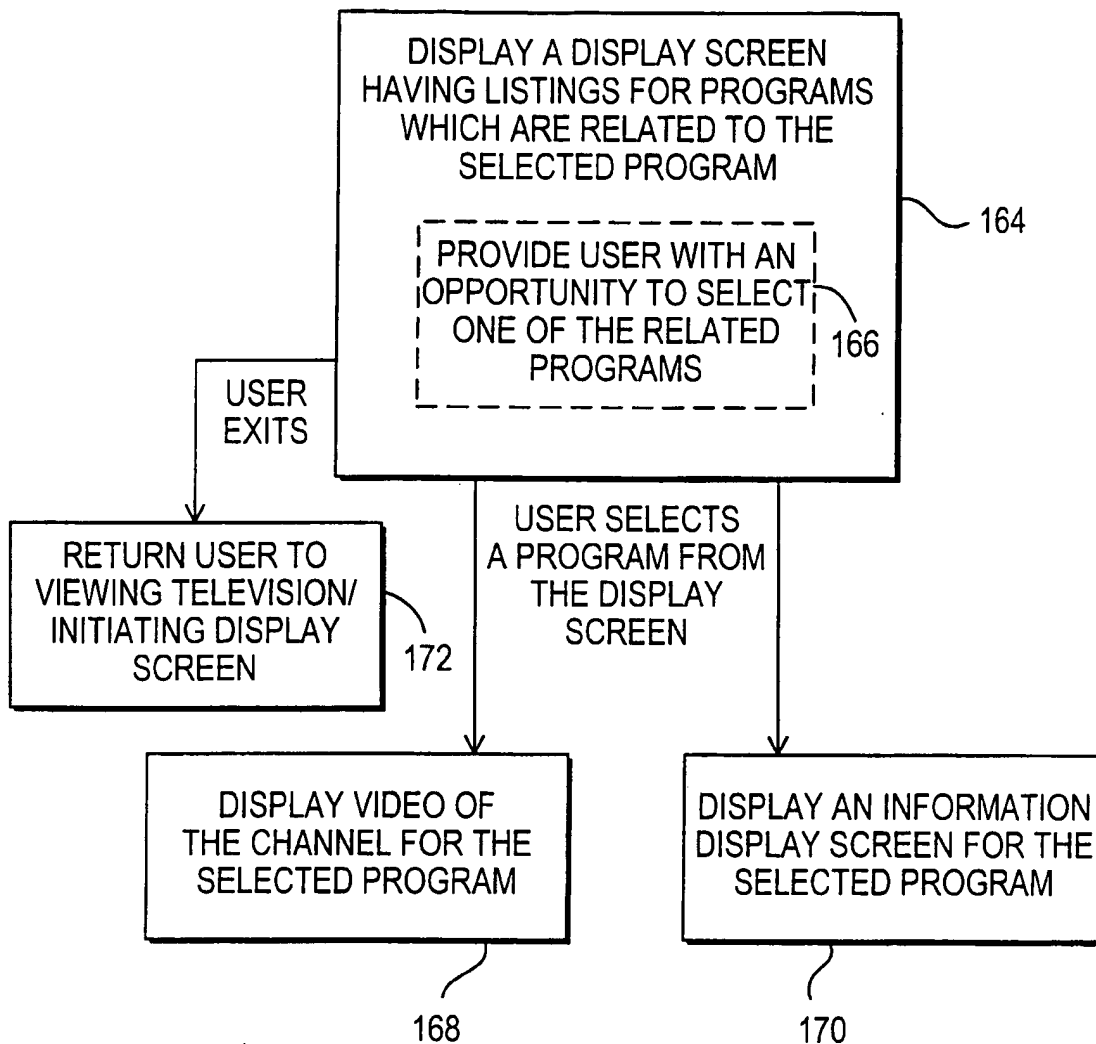


FIG. 9

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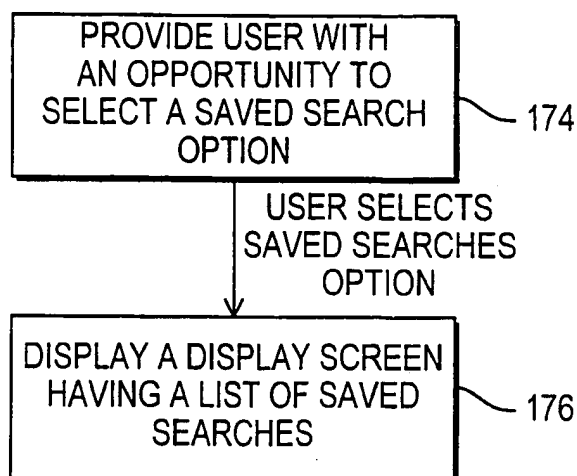


FIG. 10A

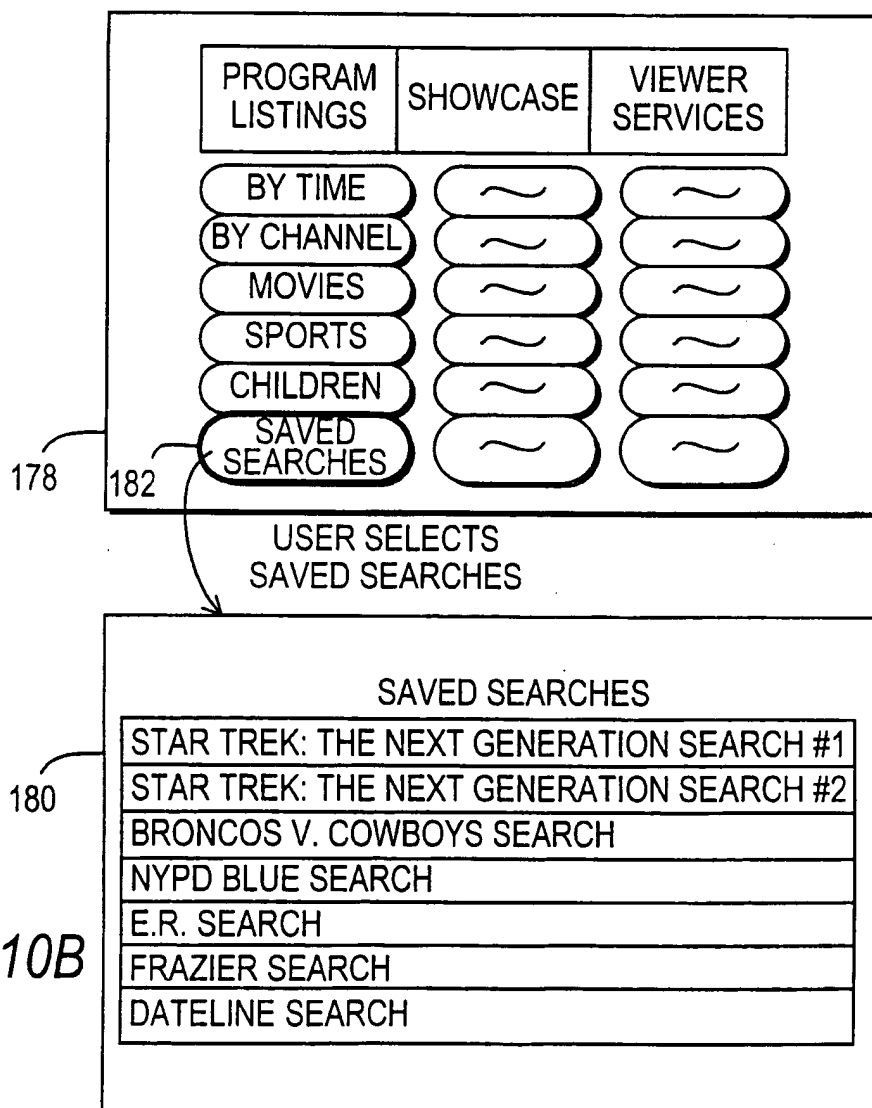


FIG. 10B

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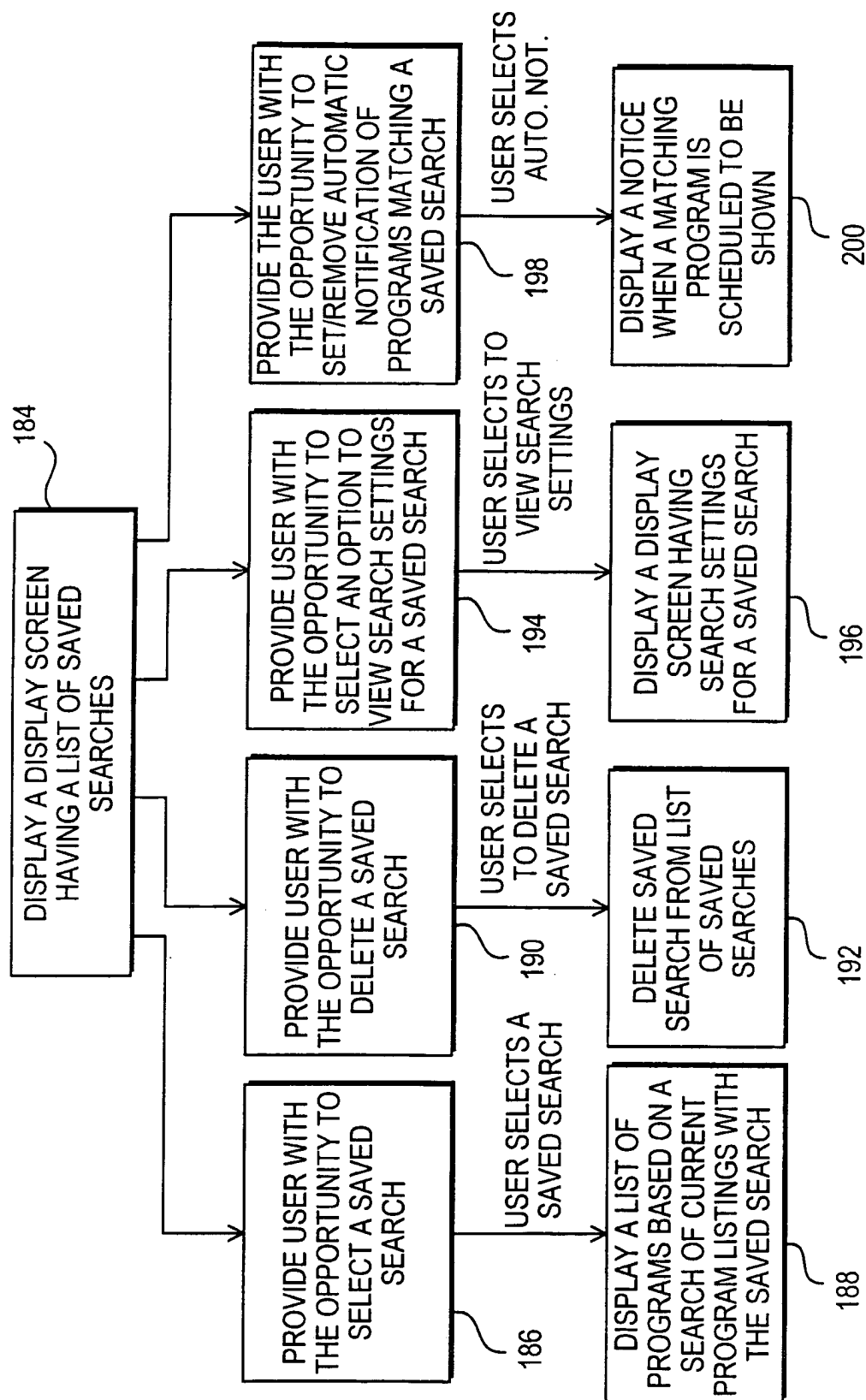


FIG. 11

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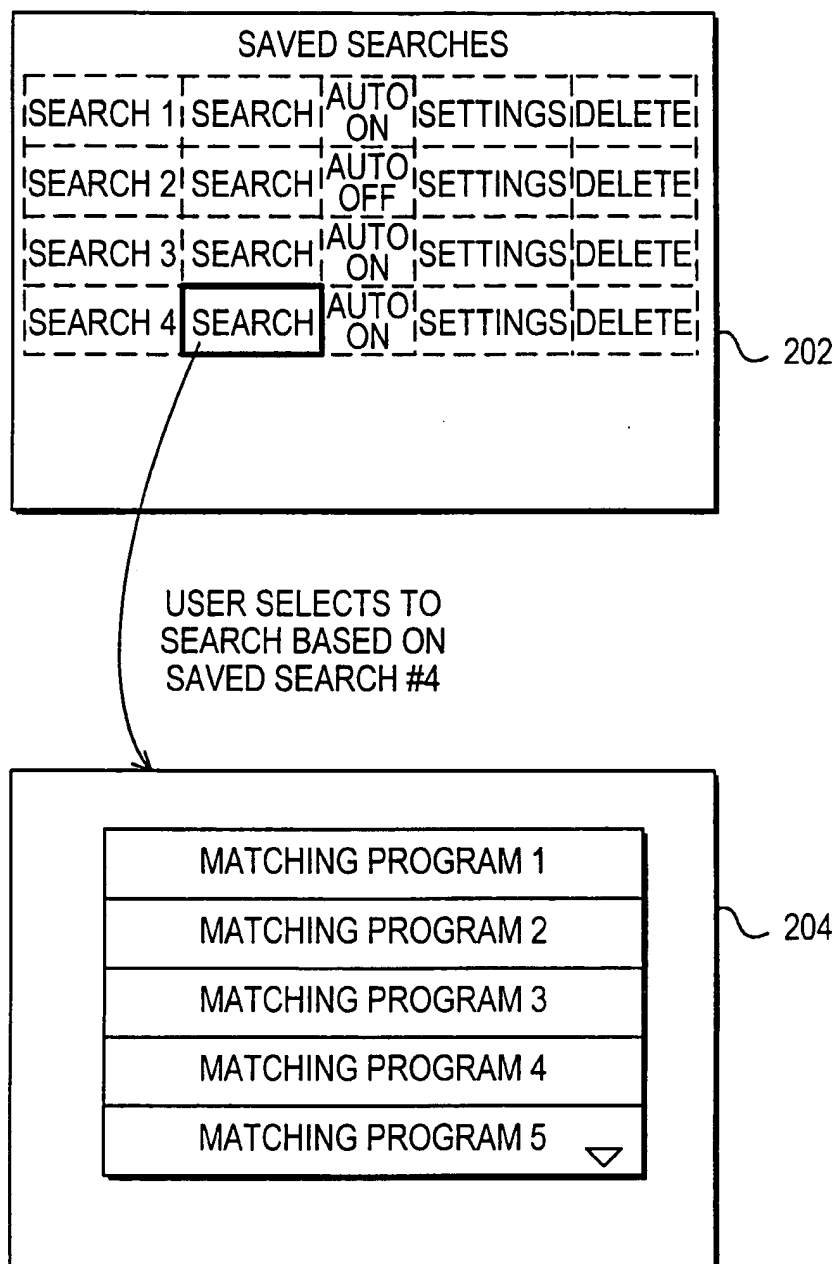


FIG. 12

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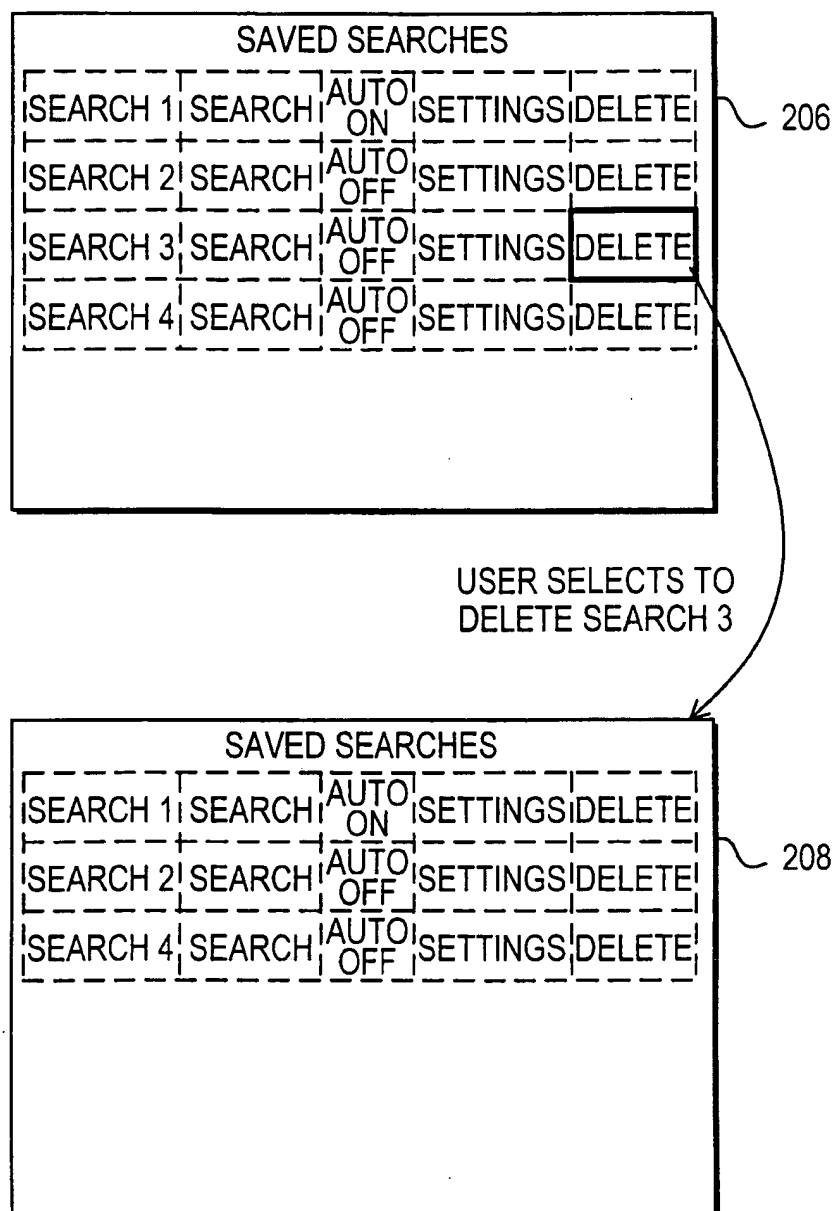


FIG. 13

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SAVED SEARCHES				
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SEARCH 2	SEARCH	AUTO OFF	SETTINGS	DELETE
SEARCH 3	SEARCH	AUTO OFF	SETTINGS	DELETE
SEARCH 4	SEARCH	AUTO OFF	SETTINGS	DELETE
SEARCH 5	SEARCH	AUTO OFF	SETTINGS	DELETE

210

USER SELECTS OPTION TO TURN
AUTOMATIC NOTIFICATION ON

SAVED SEARCHES				
SEARCH 1	SEARCH	AUTO ON	SETTINGS	DELETE
SEARCH 2	SEARCH	AUTO OFF	SETTINGS	DELETE
SEARCH 3	SEARCH	AUTO OFF	SETTINGS	DELETE
SEARCH 4	SEARCH	AUTO OFF	SETTINGS	DELETE
SEARCH 5	SEARCH	AUTO ON	SETTINGS	DELETE

212

USER EXITS TO VIEW
TELEVISION

VIDEO OF A
PROGRAM

MOVIE TERMINATOR MATCHING SEARCH #5
IS AIRING NOW ON CHANNEL 7

TUNE
INFO
SAVED
SEARCHES
ORDER

214

216

FIG. 14

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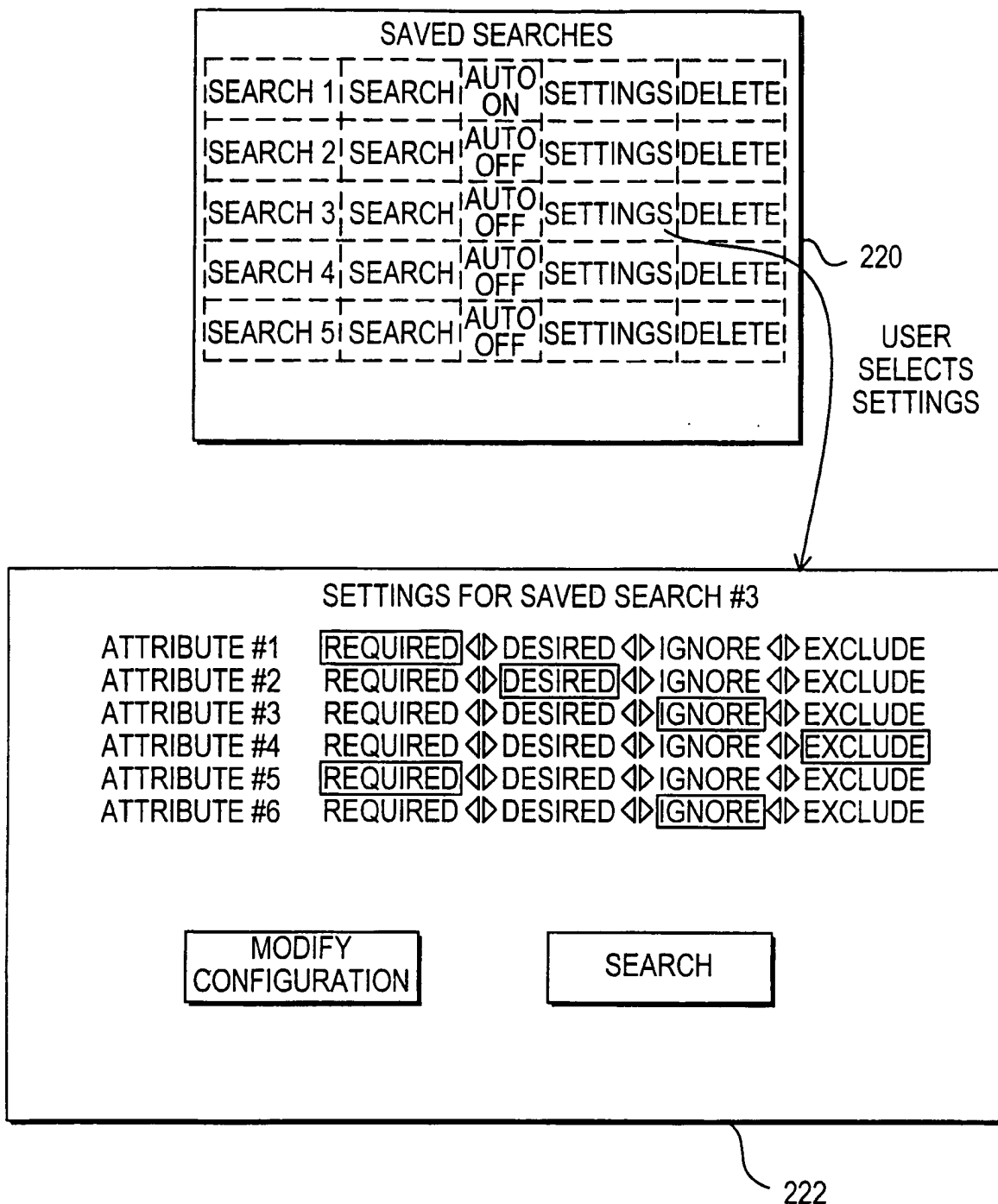


FIG. 15

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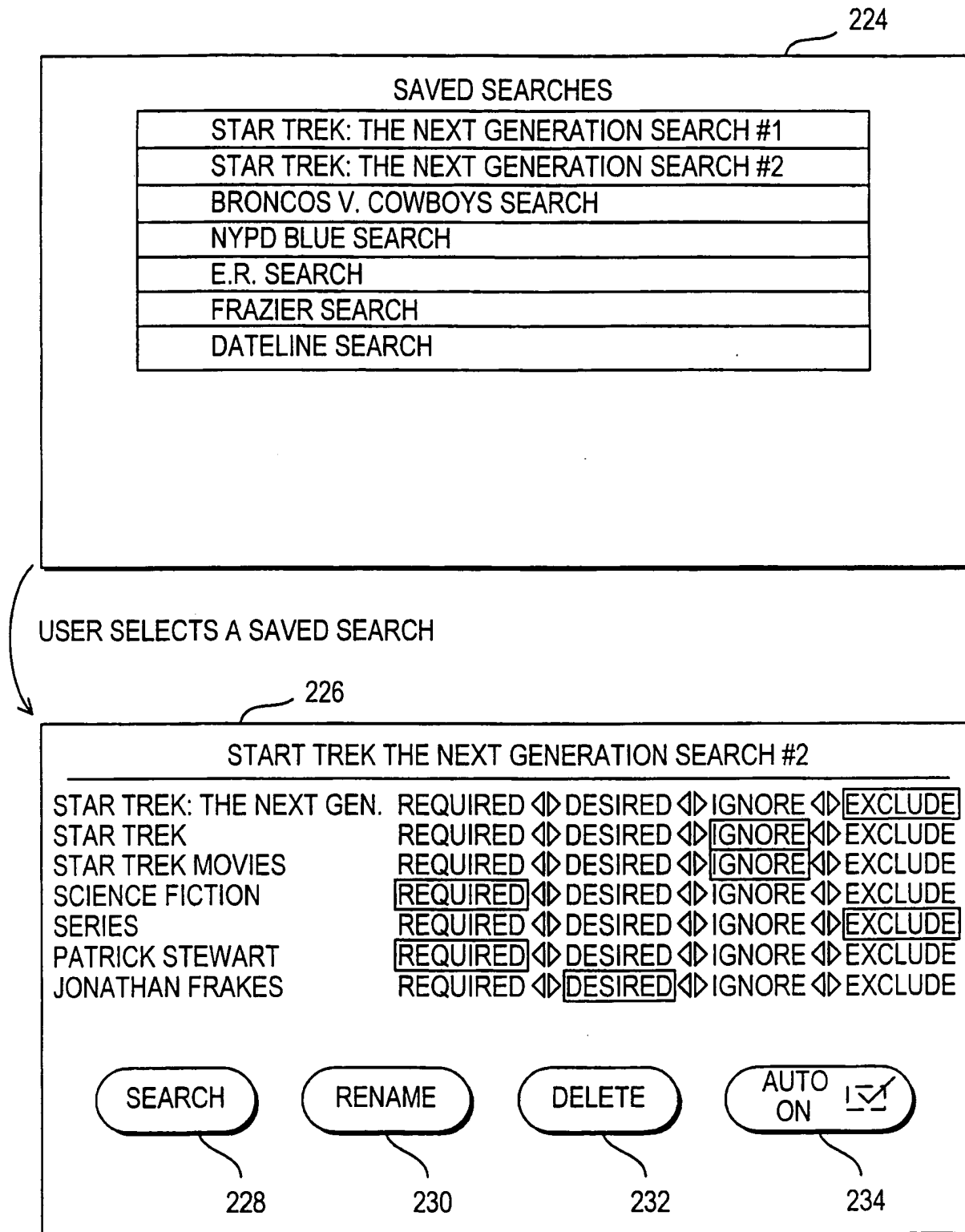


FIG. 16

INTERNATIONAL SEARCH REPORT

International / cation No

PCT/US 99/28402

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols).
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 854 645 A (TEXAS INSTRUMENTS INC) 22 July 1998 (1998-07-22) column 2, line 13 - line 26 column 10, line 12 -column 19, line 33; figures 3-5	1,2,4,6 7,9,11, 18,25,33
X A	US 5 617 565 A (AUGENBRAUN JOSEPH E ET AL) 1 April 1997 (1997-04-01) column 5, line 62 -column 6, line 55; claim 1	1,6 2-4,7-40
X A A	WO 97 48230 A (STARSIGHT TELECAST INC) 18 December 1997 (1997-12-18) page 2, line 10 - line 11 page 15, line 34 -page 23, line 29; claims 1,2,15; figures 7-12	1,6 2-40 11
	-/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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- "&" document member of the same patent family

Date of the actual completion of the international search

9 May 2000

Date of mailing of the international search report

16/05/2000

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INTERNATIONAL SEARCH REPORT

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PCT/US 99/28402

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 721 253 A (SONY ELECTRONICS INC)	11,18
A	10 July 1996 (1996-07-10) column 2, line 5 -column 3, line 3	14,15, 21,22, 25,33
A	column 6, line 48 -column 7, line 11; figure 4	25,33
A	EP 0 774 866 A (THOMSON CONSUMER ELECTRONICS) 21 May 1997 (1997-05-21) column 1, line 1 - line 41 column 3, line 24 -column 5, line 27; figure 4	11,18, 25,33

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/28402

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EP 0774866 A	21-05-1997	US 5867226 A BR 9605543 A JP 9200638 A SG 49982 A	02-02-1999 11-08-1998 31-07-1997 15-06-1998